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ABSTRACT

River rafting trips at the Colorado Outward Bound School (COBS) present participants with an opportunity for developing self-confidence, self-awareness, and concern for others through challenging and adventuresome group effort, combined with a program of instruction in rafting skills, safety consciousness, and awareness of the natural environment. The manual indicates what is expected of a COBS rafting instructor before, during, and after river trips. Designed for the highly qualified river man, it should not be considered a complete "how-to" manual for the novice boater, but rather a reference for study to which material can and should be added. Outward Bound goals, objectives, methods, staff roles and responsibilities, guidelines, and emergency procedures are presented. The manual also details the purpose, key points, and safety measures of 15 river trip learning activities including camp craft, raft mechanics and boating equipment, rapids running, hiking, solos, and reading and campfire programs. Curriculum outlines for the Yampa, Green River, and Colorado River courses include season duration, special considerations, itineraries, and sample daily programs. The appendices include detailed lists of river equipment; general cooking guides and menu ideas; specific guidelines for sanitation, raft maintenance and repair, emergency techniques, and evacuation procedures. (SB)

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COLORADO OUTWARD BOUND SCHOOL

RAFTING MANUAL

Al Brown

1976

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PREFACE

This manual will articulate what is expected of a Colorado Outward Bound School rafting instructor. It is a reference for study and should be read and digested well before an instructor's first experience in the field. It is designed for the highly qualified river man hired by Outward Bound and should not be construed as a "how to" manual for the novice boater, nor can it be considered absolute or all inclusive. It is a reference and guide and is no substitute for experience and good judgment. Instructors should consider this manual unfinished, amending and adding to it as their own experience suggests.

INTRODUCTION

More than three decades ago, Dr. Kurt Hahn observed that advancing civilization and technology were depriving many persons of the opportunities to develop self-reliance, physical fitness and a compassion for others.

It was his belief that, "the aim of education is to impel people into value forming experiences and to ensure the survival of these qualities; an enterprising curiosity, an undefeatable spirit, tenacity in pursuit, readiness for sensible self denial and above all, compassion". He formulated the program in Britain called Outward Bound, which utilized the challenge and adventure of rugged natural environments as a means of instilling these values.

Outward Bound is particularly germane to today's society. It teaches people that they possess the necessary internal resources to deal effectively with adversity and do not need to seek forms of escape, that despite differences in background humans are more alike than different and can live and work together, that being helpful is part of human nature, and that we are natural beings closely tied to the earth we live on, with a responsibility to protect and maintain it in a healthy state for future generations.

Outward Bound is an educational organization dedicated to the principle that the individual develops self confidence, concern for others, and self awareness in the broad scheme of things when confronted by challenging, shared experiences involving group effort and adventure.

Outward Bound Incorporated is the parent organization in the United States, and consists of a national body, six Outward Bound schools, and the Dartmouth Outward Bound Center.

The Colorado Outward Bound School, chartered in 1962, was the first Outward Bound school in the United States. While the Colorado School runs the majority of its courses in the mountain environment, the river program has been in operation since 1968.

CHAPTER I GOALS AND OBJECTIVES

In general the Outward Bound program is founded on a number of assumptions. On a philosophical level it assumes that:

- one reveres life for having experienced it in intense dramatic terms
- from such experience one learns to respect one's self
- from respect of self flows compassion for others
- compassion for others is best expressed in service with mankind
- man can develop a relationship with the natural and spiritual universe

On an operational level it assumes that:

- people are more resourceful and more capable than they think they are
- a small heterogeneous group has the resources within it to cope successfully with significant physical and mental challenges
- people are capable of dependable decision making and responsibility
- more can be learned by presenting problems than by offering pre-created solutions and methodologies
- stress and shared adventure are important catalysts in the discovery process
- the single most important determinant of a person's future is what he thinks of himself
- significant, long lasting learning can be achfeved through an intensive short term experience

From these assumptions we generate these two behavioral goals:

1. to enhance and expand one's self concept, as evidenced by

    - overcoming initial hesitation, fear and false fatigue when confronted by physical and mental challenges
    - conveying a positive self regard in appearance and manner, and by stating one's position, especially when it differs from prevailing views
    - accepting responsibility for one's actions and feelings, including a willingness to accept and follow through on leadership assignments
    - recognizing personal strengths and limitations and a willingness to help when needed
    - formulating a philosophy of life (however tentative) which includes one's own place in the overall scheme of things

2. to heighten one's awareness and appreciation of others, as evidenced by

   - a willingness to help companions achieve by giving physical and mental support
   - an empathy with the needs and feelings of others
   - deferring personal wishes to the interest of group harmony and well being
   - demonstrating a concern for the welfare and safety of others, and assuming leadership responsibilities when the need arises
   - tolerating other points of view, life styles and values, and showing a willingness to discuss differences and defend rights of others
   - an acceptance by others as a worthwhile person

In addition, the river courses seek to realize these six objectives for participants:

1. A greater appreciation for and understanding of our natural environment
2. The opportunity to develop personal values and beliefs
3. A vital and positive wilderness adventure renewing one's zest for living
4. An increased interest in learning
5. The attainment of a safety consciousness
6. The development of knowledge and skills associated with river running

Special Objectives

The river program serves a wide variety of clients and, while the stated objectives of the Outward Bound experience are extant for each trip, many groups come with special agendas and expectations.

Experiential education trips for students pursue the academic disciplines inherent in the setting of the course; the participants will have done preparatory studies before their river trip.

Educators' and Educational Administrators' courses are organized to increase the educator's understanding of the Outward Bound process, renew themselves, establish contacts and exchange information with professional colleagues and assess the development and implication of Outward Bound in the field of education.

Team building trips for corporate teams are designed to open lines of communication and promote understanding within their business structure.

Fund raising trips are run to promote a greater understanding of and support for Outward Bound.

Experience has taught us that we attain these specialized objectives by first running a good Outward Bound experience. The different special objectives for various trips do not significantly change the design of the courses, though they may alter the conduct required of the instructors.

CHAPTER II METHODS

The Outward Bound Program design is a combination of a number of highly effective Educational Methodologies and Learning Principles, an effective method of Skill Instruction and Social Processes which provide positive growing experiences for participants and Success Experiences for every individual.

Educational Methodologies

1. Small group process - where individual and group identity are easily achieved. Random, heterogeneous groupings are employed to maximize learning and carry-over effect.

2. Responsibility for learning is on the learner - where instructional staff serve as guides to demonstrate activities and ensure safety. Learning comes through the performance or non-performance of the participant and he is the sole judge of what is gained. The river furnishes immediate comment on the performance.

3. Immediate application of skills - where only those skills or knowledge which are needed to carry out an activity are taught just before they are applied.

4. Graduated challenges - where successively difficult challenges are employed to

   a. establish a pattern of success and
   b. require continually increasing effort and related feelings of accomplishment

5. Use of simplified environment - as an effective impartial teacher dispensing immediate, impartial, appropriate consequences for participant actions or inactions.

6. Use of 24-hour-day programming - providing an intensive experience resulting in eventual confrontation with self and others on more than superficial levels. Periods of unremitting stress and contrasts of hot/cold, dry/wet, tired/rested, excited/bored, together/alone, help sharpen perceptions.

7. Use of performance centered guidance approach - wherein the assumption is that persons feel better after they do better - and the emphasis is on doing first and exploring reactions and perceptions afterwards.

Learning Principles

1. We learn more easily those things that are useful to us.

2. Most learning occurs through our five senses - and the more senses are utilized in the learning situation, the easier the learning and the longer the retention.

3. We tend to associate things we are learning with things we already know.

4. The more often we see, hear, or do a thing, the better able we are to recognize or do it.

Skill Instruction

1. Introduction - Planned to get attention and convince learner of need to know.

2. Presentation - Unfolds a logical learning sequence building on prior knowledge and experience of the learners. The instructor must speak clearly and vary voice range, stress key points, maintain eye contact, use gestures and aids, and periodically check for understanding.

3. Practice - Permits student to learn by doing by giving the opportunity for immediate application of learning. Instructor observes learners to see whose skills need to be improved and uses participants to help one another.

4. Application - Performance by learners under actual conditions. Instructor present to follow up and evaluate technique, suggest refinements, and ensure safety.

Social Processes

In order to provide positive growing experiences for his crew, the instructor will have to draw constructive evaluations from the activities. These evaluations should be generated from the perspectives of the participants as well as those of the instructor and therefore require the instructor to provide leadership in group processes. The instructor must (1) be a good listener and demand good listening from the participants (2) conduct good debriefings using constructive feedback and (3) assist his crew in problem solving.

1. Listening skills

   The instructor's job demands listening skills, as he is not only interested in persons having the experience, but also in helping them to draw conclusions from it.

   a. Creating an accepting atmosphere which allows the participants to share his thoughts and feelings is significant because most persons begin communication with superficiality. This superficiality is an opener to test the other people's acceptance. If the person is accepted then deeper thoughts and feelings may be shared.

   b. We are all able to listen and absorb facts at a faster rate than most people can speak. Effective listening demands that you use the time in between to ask yourself, what does the person mean? and what does he feel?

   c. Meaning is often distorted by the way we feel about the person who is talking, or the word used. Check your own understanding by saying "Let me see if I have this right...." or "Your point is that....?".

   d. Feeling cannot be minimized or explained away, but must be accepted. An effective listener tries to imagine what the speaker must have felt under the conditions he's reporting and reflects this back to him.

2. Constructive Feedback

   Feedback is telling a person the effect what he's doing or saying has on you. Feedback can be positive or negative but always the purpose is to help the receiver.

Most of us have been raised to value privacy and politeness and as a consequence, we're not in the habit of telling others the negative effect their actions are having on us. If we're to build honest relationships, clear the air, or help a person modify behavior destructive to him and others such feedback is inevitable. The following guidelines will help you to ensure that the feedback given by you or your crew will be effective.

a. Be specific A person should be told the specific things he does and says that are being reacted to.

b. Accept your feelings Identify your feeling and take responsibility for it. Say "I feel inadequate", not "You make me feel inadequate". Transmit your feelings, not an evaluation. Any sentence that begins "I think that..." or even "I feel that..." is not likely to be followed by the actual feeling. Begin instead with "I'm (upset, annoyed, disappointed, angry, etc.) when you do thus and so".

c. Time it Feedback is most useful when the receiver is actively seeking it and prepared to listen. Another good rule is to provide feedback as soon after an occurrence as possible, again judging the individual's readiness to listen. Forcing an opinion on someone who's not prepared to hear it is futile.

d. Limit information Feedback should be limited to what a person can use and do something about. "Dumping" on him only reduces the possibility of his hearing and using the feedback.

e. Check communication Ask the receiver if he understands what you mean. Feedback can be threatening and much of what is said can be easily misinterpreted.

3. Problem Solving
The following guideline will enable you to assist your crew or an individual member to resolve virtually any problem from the first day's activities to the last.

a. Define the problem This is most critical of all the steps. The main task is to state the problem in behavioral terms which can be observed and understood by all. Statements of feelings must be traced back to situations which are generating them. Also, the importance of the problem and its relevance to broader purposes must be clearly

understood by all involved, and it must pass the here and now test, can it be solved using the resources and capabilities at hand?

Some "blocks" to effective problem definition to watch for are: abstract words, over generalization, splitting hairs, unclear goals, transmitting values and assessments rather than behavior related feelings, and getting sidetracked on other problems.

b. Gather facts This is a brainstorming session to gather as much information on the problem as possible. The task is to ask for and obtain any missing data, which might bear on the problem or solution.

Blocks include: unsupported feelings or opinions, lethargy, "bulldozing" by one or two members who cut off discussion, dwelling on past events, jumping to conclusions, and premature decision making.

c. Identify possible alternatives Given a good statement of the problem and enough facts, solutions will readily present themselves. The trick is not to grab at the first one or two but to invite as many ideas and suggestions as come to mind, including the "ideal" and "far out" ones.

Blocks include: attaching ideas to individuals, getting sidetracked by arguments and debates, and over analyzing.

d. Select best alternatives Each alternative is considered in turn and tested for workability, for what it entails, for how it relates to other tasks, and for its likely effects. For each alternative, data which is felt to be significant is restated, while other data is rejected according to consensus. As a result of such questioning one alternative generally emerges as best, and a solid commitment is then sought from the group or individual to try this alternative.

Blocks include: lack of practical experience to predict outcomes, straw voting rather than consensus based on exploring advantages and disadvantages of each alternative, confusing idea with the individual, polarizing, bulldozing, and lethargy.

e. Take action The best alternative having been selected and backed with a firm commitment by the individual or group involved, the task is to develop a plan of action which pins down specific responsibilities and contains adequate checks and follow-up procedures. Everyone is held to his commitment and excuses for lack of performance are not accepted. If need be, the plan is revised but not the commitment.

Blocks include: failure to pin down responsibility, lack of involvement and follow-up, accepting excuses for lack of performance.

Success Experiences

One of the failures of formal education is that it perpetuates, in some students, a constant chain of failures. Thus the student becomes failure oriented. Outward Bound attempts to provide successes for its students thereby establishing success orientation which will hopefully carry over into the student's future.

Providing such experience for every student is not an easy task and is often complicated by the fact that the lowest achievers need the successes most. The following considerations should help the instructor in this task.

1. Teach effective skills and teach them thoroughly.
2. Assess individual abilities and program accordingly.
3. Seek activities where problem persons can achieve.
4. Establish the attitude that mistakes do not necessarily constitute failure.
5. Do not compare performances.
6. Capitalize on group reinforcement and sincerely give your own.

CHAPTER III STAFF ROLES & RESPONSIBILITIES

The instructor's primary responsibility is to help insure that each participant in his crew is able to achieve the stated objectives consistent with their abilities and effort.

1. Think in terms of each individual. You are responsible for assessing each member of your crew and determining, with your best judgment, the appropriate technique you will use to insure a growing experience for each member.

2. Bring sharper focus to arising problems by prompting emotions and precipitating crises which compel participants to the awareness of some important issue in their own lives. Stimulate questioning and curiosity, and help students seek answers, but only to the point where these encounters lead to positive growth for the crew and the individual.

3. Establish a tone of unconditional regard between you and your crew. Show them that you sincerely care and be open and honest with them so that there is an equal exchange between you.

4. Teach through your example, not only technically (care of equipment, use of effective skills, etc.), but through your values, including: a safety consciousness; honesty; manners; language; respect for others, equipment; the environment; cleanliness; the value of learning; etc.

5. You are responsible for your crew's safety. This calls for your best skills and judgment as well as an adherence to established policies and procedures.

6. Assign leadership responsibilities so that you can phase yourself into being a crew member while at the same time assuring for their safety and providing counsel when necessary.

7. Commit yourself to the spirit and philosophy of the curriculum, and the goals, objectives and values of Outward Bound.

The instructor must also be a skilled technician in terms of his role as a boatman so that he has expertise in the skills it is his duty to teach. This role calls for a broad range of responsibility, from logistic support to boat repair. The specific duties of the rafting instructor include:

1. To perform any necessary packing, food purchasing, or other preparatory tasks as directed by the course leader. This might include vehicle or equipment maintenance and repair or participation in a course briefing.

2. To meet and establish a rapport with your boat crew at the embarkation point and see that they are adequately fed and sheltered throughout the course. You will eat and sleep with your crew.

3. To familiarize participants with all equipment and supervise its use.

4. To safeguard all persons and equipment in your care throughout the course both on and off the river.

5. To teach river rafting skills to all members of the raft group, encouraging self sufficiency within the group but personally ensuring control of the boat.

6. To teach necessary camping skills and participate with cooking, clean-up, de-rigging, etc., as needed.

7. To actively interpret the environment <u>with</u> your crew: geology, history, archaeology, ecology, etc.

8. To provide other instruction and interaction as directed by the course leader.

The River Manager or his delegate will be the liason between the clients, the Outward Bound administration, the managing agencies and the staff. They will conduct the administrative duties necessary to run the course and hold a briefing and planning meeting prior to the course for the staff. The administrative duties include:

1. Communication with the Denver office.

2. Communication as needed with the managing agencies.

3. Menu preparation and food ordering.

4. Arrangements for special labor, driving, construction, maintenance, repairs, etc.

5. Inventory equipment and reorder as necessary.

6. Staff assignments.

7. File necessary reports and requisitions.

The briefing should include:

1. Type of client and objectives of the trip.

2. Special needs and problems inherent in the course.

3. Review of participants' medicals and identification of problems.

4. Campsite assignments and course itinerary.

The course leader will organize the pre-trip schedule and assign staff to the necessary tasks.

1. The equipment must be checked, counted and packed. See appendix a.

2. The food must be picked up, sorted, packed and labeled. See appendix a.

3. Vehicles must be gassed, oiled and in all ways roadworthy, and drivers must be arranged for. See appendix g.

The course leader will debrief his staff with the River Manager after each trip and file a complete course report. See appendix h. Debriefing should include:

1. Assessment of goal realization.

2. Problems encountered and tactics used.

3. Assessment of activities and itinerary.

4. Discussion of important happenings and safety related incidents.

5. Assessment in instructional skills and techniques.

The support boat operator will run on some trips in Dinosaur and all trips in Cataract Canyon.

1. Support raft with safety equipment shall be on all trips where an escape route is more than 24 hours downstream.

2. Use

   a. Safety:
      - Litter evacuations
      - more stability in rough water
      - speed with motor
      - more safety equipment

   b. Extra cargo capacity

   c. Towing with motor

3. Equipment on boat, see appendix a.

4. Duties of pontoon boatman

   a. Supervise loading and unloading of pontoon

   b. Keep an eye on workload of other staff and help out as needed

The program staff is responsible for de-rigging the trips they work. However, extra yard work, maintenance and repair will be remunerated.

1. Unloading boats: Gear should be in separate piles to get accurate count.

2. Raft care: includes

   a. Washing - to remove sand and trash

   b. Drying in the sun to prevent rot

   c. Deflate

3. Loading rafts - rafts should be well tied and loaded in bottom of trucks or trailers.

4. Dunnage bags:

   a. Gear in separate piles for accurate count

   b. Gear should be dry

c. Packed into bags - sleeping bags in one bag, cups in another, etc.

5. Food bags:

   a. Trash into garbage can

   b. All bags washed out

   c. Reuseable items in one of two bags to be recycled

6. Loading: load items that must be worked on near top of load and load with consideration of next trip.

7. Course leader should note necessary maintenance and needs for next trip.

8. At warehouse unload appropriate items, sort and store.

As an instructor for the Colorado Outward Bound School there are policies and guidelines to which you must adhere:

1. The safety policies as outlined in this manual are to be followed.

2. Because of legal and safety considerations the use of drugs (other than by prescription) by students or staff is not permitted.

3. The use of alcohol and tobacco is discouraged because of an institutional conviction that these are in disaccord with Outward Bound's commitment to provide a natural experience. Staff are to use descretion in support of this conviction to avoid alienation of adult participants, but in no circumstance may safety be compromised.

4. Obey all laws imposed by the managing agencies while on the river, and state and federal laws while associated with a course, on school business, or in a school facility.

5. Gratuities from participants are to be tactfully discouraged. If the participant persists staff may accept but should inform the River Manager.

6. Staff on time off are not to accompany trips nor are guests to accompany staff on trips unless permission is granted by the River Manager.

7. Staff must supply their own equipment other than group boating and mess gear.

8. The use of school vehicles is restricted to school business.

9. Staff/student relationships are to be characterized by professionalism and propriety.

Finally, each instructor is a member of an instructional team and a representative of the school to the community he lives in. On and off the river he must cooperate with his fellow staff and help maintain community respect.

As staff work closely together for many weeks it is imperative that we be supportive of and cooperate with each other. Much can be accomplished with the students when efforts in their behalf are coordinated. Staff must respect and communicate with each other, and when the integrity of their efforts as a team is impaired, it is each member's responsibility to be active in solving the problems. We must also continue a concerted effort to expand our expertise in running a quality experience for our students. We must meet together, formally and informally, much during the season, while at the same time pacing ourselves between work and play, time together and time alone, so as not to "burn out" on the program or each other.

The river staff can not isolate themselves from the reputation of Outward Bound. While on and off the river we encounter many people who know of the school or will formulate an opinion based upon their encounter with us. While all may not buy our philosophy it behooves us to project a positive impression insofar as possible. Many of the people in the community we live in support the school, either through their understanding of our program, or through business relationships with us. We must deal with them respectfully and honestly to continue their support and our good reputation.

CHAPTER IV EMERGENCY PROCEDURES

Emphasis is on preventing emergencies while always being prepared should they occur. Boats should run properly spaced and in position to aid one another. The course leader will assign boating positions, running lead himself and assigning a sweep boat which will carry the sweep box and always run in last position. Boats will adhere to safety policy concerning white water running. See Chapter Five, sections F, H and I.

Emergency procedures depend on many factors (location, weather, time, water level, etc.) and hard and fast rules are difficult to document. The instructor's best judgment is called for in each particular incident. Some general guidelines are:

A. White water Emergency Procedures (see also appendix e)

1. Man overboard

   a. Get victim out of water as soon as possible.

   b. Expect to treat victim for hypothermia.

      - Build a fire
      - Put in sleeping bag (if warranted)
      - Apply external heat if needed, warm between two bodies
      - Change wet clothes

   c. Report incident to River Manager.

2. Raft tipover

   a. Go for the people first.

   b. Expect to treat victims for hypothermia - see above.

   c. Tow boat or put crew on over-turned boat and proceed to shore.

   d. Assign one boat (or two if available) to pick up stray flotsam.

   e. Right raft, reinstate any crew when recovered, and proceed.

f. Written report of incident to River Manager

3. Wrapped raft

a. Recover overboard persons first.

b. Try to free raft.

c. If raft can't be freed see "Loss or destruction of boat or other principle equipment".

B. General Emergency Procedures

1. Injuries and illness

a. Give first aid and second aid.

b. Consult with physician if accompanying trip or another trip.

c. Record what was done.

d. Determine if evacuation is necessary.

2. Evacuation

a. Criteria:

If the person is immobilized.
If the person may need continued medication or special treatment.
If there is a possibility of further damage to health.

b. See emergency phone number and escape routes for river.

c. Consider evacuation by river as first alternative. If appropriate and possible, send someone out to have ambulance or other transportation ready at evacuation point. Use participants to carry out the evacuation if necessary. If not continue the course if possible.

d. If evacuation by river is out of the question, send one instructor and one volunteer to nearest phone or means of communication. They should carry appropriate gear (water, boots, maps, etc.), and necessary information for the helicopter pilot. Keep victim as comfortable as possible, continue first aid as required, and record vital signs until helicopter arrives. Give all information to helicopter pilot or attendant when they arrive. See COBS mountain instructor's manual.

3. Death; after all attempts to revive victim have failed.

   a. If body is not found mark spot where last seen and search. Eddies and heads of islands are most appropriate spots. Do not delay too long in searching before notifying authorities. Course leader must determine whether or not to continue course.

   b. If body is found wrap it carefully to prevent further injury or disfigurement to the body. Evacuate the body to the nearest appropriate take out point if possible. If not, stash the body above the high water mark in as protected a place as possible. Mark and note the location and notify authorities. Report promptly to the River Manager or COBS main office.

   c. In all emergencies and especially when a death is involved, the instructor must see to the morale and health of his crew.

   d. Because of the severe liability and public relations implications, staff should avoid making public statements insofar as possible, and refer inquiries to the COBS office or designated spokesman. On the other hand, if cornered by aggressive newsmen, it is better to give a brief, factual, and non-judgmental statement, than to be accused of covering up.

4. Lost participant

   a. Select search leader; senior or most experienced person. Leader or his delegate keeps written log of events.

   b. Gather all available information; name, age, description, condition and disposition, intended plans, where last seen.

   c. Hasty search - determine and search most likely places.

   d. General search - systematically comb the area so carefully that a conscious person could not be missed.

   e. Fine search - leave no stone unturned.

   f. If search efforts fail search leader decides at what point to call for additional help - notifying both government officials and COBS administration.

5. Loss or destruction of boat or other principle equipment, after all attempts for recovery or repair have failed.

   a. Use available equipment and/or other raft parties to transport students safely to an appropriate point of communication, and there acquire replacements to carry on the course or evacuate.

   b. If students can not be transported safely consider the possibility of hiking to a point of communication.

   c. If whole group can neither boat nor hike down river then word must be sent by the remaining equipment and appropriate members of the group or by another raft party to arrange for replacement equipment or evacuation.

   d. When time allows, evacuation of only the stranded members of the group may be considered, in accordance with the concerns of the group and its leaders and the availability of proper supervision for both segments.

   e. Identify and mark any equipment left behind.

C. Reports of all incidents and accidents must be made in the course leader's report and the appropriate accident report forms.

CHAPTER V ACTIVITY GUIDES

A. Boat crew assignments

1. Purpose:

   a. to introduce students and staff and begin getting to know one another

   b. to establish the units of operation within the course

   c. to begin clarifying the roles and responsibilities of the crew and its members

2. Key points

   a. Staff and students learn one another's names.

   b. Instructors begin to identify personalities.

   c. Students get perspective and basic orientation to the course.

B. Equipment issue

1. Purpose:

   a. to familiarize students with their camping equipment and its use and care

   b. to establish the precedent of the crew working and living together

2. Key points

   a. Instructor issues gear in an organized manner, explaining its use and care.

   b. Instructor explains basics of campcraft.

   c. Students set up their first camp.

   d. Instructor explains that proper use and care of equipment is necessary to the student's comfort and safety.

3. Safety

a. Instructors must check all OB equipment for completeness and usability.

b. Use of the OB issue gear is mandatory, (except if a student wishes to use comparable personal equipment), with the possible exception of the foam pads when the fiber fill sleeping bags are used and the weather is suitable.

c. Breakable or sharp items are not to be packed in the dunnage.

d. Sheath knives are usually inappropriate to wear while boating and may be inappropriate to bring at all. The integrity of the sheath and the characteristics of the knife are determining factors.

e. Instructors must check personal clothing, footwear and miscellany for completeness and feasibility. See appendix a.

C. Course orientation

1. Purpose:

a. to formally introduce staff

b. to establish the precedent of the group interacting as a body

c. to familiarize the students with the particulars of the course

d. to give the students the opportunity to voice their expectations and ask questions

2. Key points

a. Staff and students introduce themselves briefly giving their expectations of the course.

b. The trip itinerary is covered day by day.

c. Instructors explain and assign the rotation of meal duties and porta pottie etc., and explain kitchen procedures.

d. Staff covers the rules and regulations imposed on the course:

(1) the managing agencies' regulations concerning boating parties, campsites, fires, trash and litter, collection of artifacts, specimens, souvenirs etc., defacing the environment and property, disposal of human waste and pollution

(2) COBS rules and recommendations concerning participation, safety in the wilderness, use of drugs and alcohol and tobacco.

e. Staff answers questions and promotes discussion.

f. Morning orders are given.

3. Safety

a. Students are not to wander off by themselves. Groups of four or more may get permission to hike from their instructor but must indicate specifically who is going, where they are going and when they will return.

b. Use of drugs and alcohol constitute a safety problem and are not permitted.

c. Students are to be warned of environmental hazards particular to the situation of each course. Cold, heat, wet, dehydration, rock fall, snakes, ticks, scorpions, drowning, etc.

D. Campcraft

1. Purpose:

a. to provide an opportunity for group cohesiveness and for students to become more self-reliant in providing two basic necessities of life, food and shelter

b. to present situations which test a participant's initiative, humor, responsibility, and willingness to perform routine work, especially when fatigued

2. Key points

a. Time control - camp before dark, providing time to get comfortable, to eat properly and get needed rest.

b. Site selection -

(1) Provides protection and features to facilitate erection of shelters and level and dry areas to sleep on.

(2) When camping in non-established campsites (Cataract Canyon) must have an adequate location for the kitchen area.

(3) Gear and people must be located above possible high water.

c. Division of labor -

(1) Crews should locate their sleeping sites, unload and care for boats and gear.

(2) Rotate camp duties among crews, cooking, porta pottie, etc.

(3) All crews pitch in to assist in group chores; gather fire wood, carry necessary items to kitchen area.

(4) Individual crews erect shelters, lay out sleeping gear and see to equipment care.

d. Camp sanitation instruction is to be given on sanitation procedure, use of portable toilet and disposal of trash and garbage. See appendix c.

e. Fires -

(1) Fires are to be built only in established fire pits or fire pans except in emergencies.

(2) Firewood must generally be collected upstream from camp. Only dead, downed timber should be collected - generally the best source of fuel is from driftwood piles.

(3) Instruction should be given in fire building techniques, conservation of fuel, and safety.

(4) In wet weather protect firewood pile.

(5) Fires must be dead out anytime they are left unattended.

f. Cooking -

(1) Teach care and use of dutch ovens, griddles and other utensils.

(2) Teach proper use, care and organization of storage containers, food, water and equipment.

(3) Plan sequence of cooking procedures with available utensils before starting, considering which foods require more time for preparation.

(4) Avoid burning or undercooking foods. Have patience and be careful not to ruin meals.

(5) Meal crew cleans kitchen except for all individuals being responsible for cleaning their personal eating utensils.

(6) Put away all food and equipment for the night, safe from rain and animals.

g. Shelter, clothing and bedding -

(1) Sleeping area should be level, flat and dry.

(2) Crew must decide whether or not to pitch a tarp considering the weather conditions. If tarp is to be pitched, consider probable wind direction, drainage, tight structure, ventilation and room to move about.

(3) Instructors teach appropriate knots.

(4) Instructors stress importance of keeping gear and camp clothing dry.

3. Safety

a. Students are to be fed and sheltered to insure their health and safety while on the course. Instructors must determine when learning by doing may impair the safety of his crew and direct their decisions and actions accordingly e.g. failure to pitch the tarp properly on a rainy night may best teach students the need to do the job right, however, continued cold and wet weather after such an incident may increase the possibility of hypothermia and therefore

the instructor may decide to step in to see that the tarp is properly pitched.

b. Students are to be instructed of the hazards around camp: burns, cuts, fires, etc., and the techniques to avoid such accidents.

c. Axes will not be carried on river courses.

d. Shoes will be worn at all times.

e. Instructors must stress the importance of sanitation and insure sanitation insofar as possible.

E. Raft mechanics and boating equipment

1. Purpose:

a. to provide for proper and safe use of boating equipment

b. to provide for duties and responsibilities to be shared and accomplished by the students

c. to provide for an increased understanding of the necessity and intrinsic worth of proper use and care of equipment

2. Key points

a. Description and use of all boating equipment is given on first river day as students rig for trip.

b. Explain construction of boat and inflation procedure: valves, cross tubes, pressure, bleeding, pump use and care.

c. Collect necessary equipment: paddles, life jackets, bail buckets, ropes, ammo boxes, etc. and explain their use. See appendix a.

d. Explain daily maintenance of boat: pressure, patching, cleaning and securing for the night.

(1) Unload boat.

(2) Turn boat on side and wash out all sand and trash.

(3) Check for holes or leaks in floor and tubes.

(4) Turn raft over and carry above high water mark.

(5) Tie the boat to rock or tree so it won't blow away.

(6) Bunch all life jackets and secure.

(7) Put all raft gear neatly near boat.

e. Explain rigging lines and bow line.

f. Instruct gear tie-in techniques.

(1) four main principles

- rig for the tipover so nothing would be lost
- rig for personal safety - no loose lines, all items tied down tightly
- rig for equipment safety - no hard items or protrusions on floor, heavy items in bow and stern
- rig for neat and convenient load, items accessible when needed during day, rig easily untied and unloaded, room to bail

(2) teach appropriate knots and hitches

- bowline
- half hitch and slip half hitch
- clove hitch
- packers' hitch

(3) placement of extra life jacket, paddles and securing bail buckets

3. Safety

a. Boats and boating equipment must be inspected and in good operating condition prior to each course.

b. Grab lines must be tight and in good condition and each boat will have attached approximately 30' of bowline in good condition with proper securing tie in place.

c. Each boat and each party of boats will carry required equipment as listed in appendix a.

d. Life jackets will be inspected for integrity prior to each course.

e. Kits (sweep, first aid, patch) will be inspected for completeness of content as per appendix a.

f. No loose or slack lines aboard.

g. No loose gear aboard - all tight.

F. The safety lecture - the course leader and staff will review safety rules with participants just prior to each trip.

1. Purpose:

to establish a serious tone at the onset of each course and set an example of safety

2. Key points

a. Use your head - safety consciousness on land and water.

b. Life jackets shall be worn while on, in or near the river.

c. Tennis shoes shall be worn while on or in the river.

d. No swimming in the river without life jacket and approval of River Specialist. No diving into the river.

e. Rafting instructors are responsible for keeping the raft immediately following in sight at all times. Explain spacing and assign positions.

f. Review procedure for "Man overboard": swimmer floats on back, feet downstream, backstroking gently to retain stability.

g. Exposure or hypothermia shall be explained briefly and emphasis on quick rescue given. Warning about expending energy in the water shall be given.

h. Explain danger of sunburn and heat.

i. Explain use of paddle signals.

j. Shoes at all times.

k. Instructor in boat at all times in position to spot.

l. Rapid swims are allowed only when:

(1) the River Manager and senior staff have surveyed and designated specific rapids as suitable for swimming

(2) the course leader and his staff survey rapid just prior to swim, considering changes in water level, water temperature, weather, time, etc.

(3) a pick-up boat with crew is stationed in reasonable pick-up position before anyone swims

(4) the course leader determines any other safety measures necessary and implements them i.e. raft with crew accompanies swimmers? Limit number of swimmers at one time?

m. Determination of use of man overboard drill rests with course leader. He must consider: place, time, weather, water temperature. No more than two crew overboard at a time - men overboard stay near boat.

G. River expeditioning

1. Purpose:

a. to provide the primary environmental vehicle whereby course goals will be realized

b. to provide a simplified, unfamiliar and sometimes imposing environment in which the participant may confront and solve realistic problems

c. to provide for the application of newly acquired knowledge

2. Key points

a. Boat as a group responsible for one another. We observe rules of spacing and position so as to support each other.

b. Students are taught to read the river; currents, eddies, sleepers, holes, approaching rapids, etc.

c. Students are taught to use the river guide as an aid to navigation.

d. Students are given positions of responsibility within the boat.

e. Crew may have to float in life jackets early in the course for a man overboard drill.

f. Although much of the learning during expeditions results from experience ("good judgment is the result of experience which is usually the result of bad judgment"), the instructor should be available as a resource, assisting participants to adapt to their new environment. The instructor should see that each participant is actively participating in applying and acquiring new skills.

g. Expeditions should include a variety of problems/ experiences that require the application of skills.

h. By the end of the first few days the crew should be starting to work and live together as a unit - both in terms of solving their own problems and making most of the decisions. The instructor continues to help develop relationships within the crew. Campfires, discussions after morning readings are good times to reflect and talk, and to work on conflicts that might have developed.

H. The training sequence for rafting techniques

1. Purpose:

a. to teach students how to maneuver the boat

b. to give the instructor the chance to assess individual skill levels

c. to provide students experiences of success in learning new skills and techniques

2. Key points

a. The four step method of skill instruction is employed to teach strokes, commands, and theory. See Chapter II.

(1) Introduce the method to get the learners' attention and convince them of the need to know.

(2) Demonstrate how to hold the paddle and do a forward stroke.

(3) Introduce the command "forward".

(4) Practice together the forward stroke.

(5) Introduce the command "hold".

(6) Evaluate the performance of individuals and their efficiency as a team.

(7) Introduce the concept of paddling in unison and assign a pace setter.

(8) Re-practice and evaluate the forward stroke.

(9) Introduce and demonstrate the "back paddle" stroke and command.

(10) Have the crew practice "back paddle" and evaluate.

(11) Have one side of the boat do forward stroke.

(12) Evaluate what happened and what could be added to enhance efficiency - turns.

(13) Introduce commands "right" and "left" turns and practice them.

(14) Present the terms position and attitude and explain their meaning. Explain right and left bank orientation.

(15) Present concept of vectors and explain implications of changes in position and attitude.

(16) Demonstrate attitude changes and position changes. Explain ferry position.

(17) Introduce concept of anticipating raft's continued spin after forward is called.

(18) Question participants to evaluate why and what to do.

(19) Introduce and demonstrate pry and draw strokes and explain their use by sternmen.

(20) Introduce practice drills and begin to rotate students into captain position and have them do drills.

- Captain prys boat 360 degrees and stops its spin.
- Captain draws boat 360 degrees and stops its spin.
- Captain adds efforts of crew to help spin boat each direction and come out of spin at "forward" and at "backpaddle".
- Captain orients boat into "ferry" towards bank.

b. Instructor coaches each participant and prompts evaluation. Consider technique, command presence, and voice volume.

(1) Ask student to evaluate his own performance - usually a humble perspective.

(2) Ask crew to evaluate performer - usually a positive perspective.

(3) Instructor clarifies and adds own perspective.

c. It is very important that each member of the crew does these drills promptly during the first few hours on the river before the first major rapid is reached.

(1) The instructor will be better able to assess his crew and each individual's strengths and weaknesses, providing him with the perspective necessary to run the first rapid.

(2) The crew will get much repetition of strokes from various positions within the raft necessary to ingrain response.

(3) All members of the crew will be able to empathize with the captain's position.

(4) The basics will be in practice prior to learning more advanced technique.

I. Rapid running

1. Purpose:

a. to provide the primary challenge of the course

b. to provide for individual encounters with fear, responsibility and competence

c. to provide for social encounters with cooperation, decision making and role delegation.

2. Key points

a. At the first minor rapid or earliest appropriate time students will get instruction of basic white water theory.

(1) Current - direction, speed, force, effect on raft, identification

(2) Eddies and eddy fences - cause, effects, entering and exiting, identification

(3) Obstacles - exposed rocks, sleepers, banks, waves (reflex waves), helical flow, holes, identification

(4) Maneuvering - vector analysis, Galloway Stone vs. Powell technique, attitude and position of entry

(5) Responsibility to other rafts, spacing, position, timing

(6) Emergency procedures - man overboard, wrapped raft, tipover, etc.

b. At first major rapid students are instructed of further theory.

(1) Rapid formation

(2) Survey rapid from top to bottom

(3) Identify the particulars of the current through the rapid: speed, direction, eddies, force, effect on the boat

(4) Identify the obstacles: major and minor and remember both banks

(5) Identify possible runs

(6) Select and plan a run - consider takeoff point, entry, location markers, position and attitude, spacing and position, what to do at the end of the rapid

(7) Consider alternate plans and possible implementation

(8) Review emergency procedures

c. Instructor appoints captain for each rapid. The crew is encouraged to participate in decision making process. Ultimately instructor will phase himself out of decision making. Captain will assign positions in the raft.

3. Safety

a. Instructors will take over command of the raft from student captains when mistakes threaten the safety of the crew or may cause serious damage to the equipment.

b. No raft crew will run any rapid solo except in an emergency.

c. Time must be allowed, following the last major rapid run in a day, to insure sufficient daylight hours to carry out the appropriate emergency procedures should an accident occur in the rapid.

d. COBS instructors will personally captain particularly dangerous rapids such as Warm Springs and Satan's Gut, or any run which the instructor determines would represent a serious safety problem should an accident occur, i.e. tired and worn out crew, wet and cold crew, difficult run late in the day, difficult landing above a major rapid.

e. Instructors should require life jackets on crew on some rapid overlooks.

f. Instructor must check their boat and crew's readiness prior to each major rapid run.

(1) Raft properly inflated

(2) Gear tied in tightly

(3) Bow line stowed correctly

(4) Life jackets fastened

(5) Crew seated properly

g. Instructors will review students' plans.

h. Instructors will check with each other about proposed routes and any out of the ordinary runs.

i. Boats will run rapids with care to proper spacing and position.

(1) First boat through rapid will station itself as a pick-up boat.

(2) Following boats must run close enough to assist boats in front of them.

(3) Sweep boat will be last through rapid.

J. Hiking

1. Purpose:

a. to provide for a diversity of challenges and arenas for success experiences

b. to provide for increased understanding of the off-river environment

2. Key points

a. Hikes can be of a variety of types and are appropriately initiated throughout the course. They may be: interpretive, physically and mentally challenging, goal oriented, or exploratory. Generally they are a combination of uses.

b. Hikes present many opportunities for imaginative and innovative activities through which students learn and grow. Instructors should be active in directing and supporting such activities.

c. Hikes may also present conflicts for individuals or the group which will require considerable effort to resolve. Once again the instructor must be receptive to whatever is necessary to resolve such problems in a manner commensurate with the realization of OE goals.

3. Safety

a. Crews will hike together and be supervised by an instructor.

b. Crews are to be instructed on hiking techniques and safety including:

(1) Staying together

(2) Rock fall

(3) Spotting techniques

c. Each person will be dressed suitably for the prevailing and anticipated weather conditions.

d. Each hiking group will communicate their proposed route to the course leader.

e. First aid kits will be readily available to each crew.

f. Crews will avoid hiking or climbing where prevailing conditions would require hard hats and/or ropes unless hard hats and/or ropes are available and the hike or climb is approved by the River Manager and/or Program Director.

K. Climbing and rapelling See COBS Mountain Instructor's Manual

L. Academics

1. Purpose:

a. to provide for an increased awareness and understanding of the environment

b. to provide for an increased awareness and understanding of the relationship of learning to the living of a meaningful life

2. Key points

a. The understanding of the process of acquiring knowledge is more important than the acquired knowledge.

b. Instructors must be aware of and receptive to learning situations prompted by:

(1) the student's curiosity

(2) the student's need to know procedures, techniques and theories necessary to accomplish real tasks

c. Previous lessons should be used whenever possible to prompt further depth of study and/or foster further interest.

d. Use resource materials and resource persons efficiently.

M. Solos

1. Purpose:

a. to provide an opportunity for a period of solitude for:

(1) Introspection

(2) Reassessment

(3) Meditation

(4) Appreciation of nature

b. to provide a contrasting change of pace

2. Key points

a. Because of the generally short nature of river courses, there may be too little time for solos to be worthwhile.

Some time for solitude is generally warranted on all courses but only on the longer courses do we take time to generate a true "solo".

b. An attitude receptive to solo needs to be generated early in the course while at the same time trying to avoid generating too many expectations.

c. Arrive at the solo area early enough in the day so that participants can have time to be briefed in a relaxed atmosphere as to the purpose of solo.

(1) An appropriate reading helps set the tone.

(2) The instructor's presentation should include suggested objectives, but it's up to the participant to decide what to make of it. Your briefing should neither minimize nor talk to death the possible significance.

(3) Urge participant to keep a journal.

d. Take participants to their sites which will be spaced far enough apart as to provide maximum privacy, but not so far apart as to prove a problem in case an emergency demands rapid assembly.

e. Indicate boundary of each site and make sure each participant knows the location of your campsite in relation to his.

f. Give necessary instructions regarding fire building, respect for environment and necessity for minimum disturbance to the area.

g. Provide time at the end of experience for individual talks and crew debriefing.

3. Safety

a. There will be instructors on solo watch at all times and placed in such a manner as to provide maximum security to participants.

b. There will be a person to person responsive check to participants at least every 24 hours.

c. In case of emergency, participants will call for attention of other soloists who in turn will call or get instructors.

d. Each participant will know where at least one of his soloing neighbors is and alert him if approached by strangers.

e. Solo will not exceed 72 hours.

f. Swimming, climbing and hiking are not allowed while on solo.

g. Soloists will remain at designated site until instructor arrives to pick them up.

N. Debriefings

1. Purpose:

a. to help students articulate, clarify and explore their growth through the various activities of the course

b. to resolve problems and differences within the crew

c. to assess the technical growth of the crew, its strengths and weaknesses, and form plans to facilitate performance

d. to promote sharing, compassion, understanding and cooperation within the crew, and for all members of the course

2. Key points

a. Debriefings generally occur near the end of each day and after many activities or events.

b. Debriefings early in the course will generally be technical, and socially shallow, but as the crew gets to know and trust each other more depth can be obtained.

c. Instructors should not threaten students (especially early in the course) with too much emphasis on "encounters" or "sensitivity" sessions. The encounters and sensitivity will happen without verbally prompting it.

O. Readings and campfire programs

1. Purpose:

a. to inspire thought, stimulate discussions, and/or bring experiences and deeply felt emotions to a conscious level

b. to provide opportunities for a crew to participate with other crews

2. Key points

Campfire programs, shore activities, and appropriate times while on the river can offer many and varied forms of interaction.

CHAPTER VI CURRICULUM OUTLINES

Yampa Courses Dinosaur National Monument

A. Season

Generally the river is runnable from the end of April through mid-June. One could often run the river earlier or later but it would be risky to plan a program out of this general season. The average peak will come in late May or early June around 15,000 cfs. High runoff years will peak later, low years earlier. Late April and early May trips often suffer from low water and unstable weather conditions. The water is always cold and contributes to the constant threat of hypothermia.

B. Special considerations

1. Clients are generally high school students as this is a time of year when they are still in school and can organize a trip.

2. Logistics. The embarkation point is Deerlodge Park. about 100 miles from Vernal, Utah, a two to two and one-half hour drive. Take-out at Split Mountain boat ramp, 20 miles from Vernal.

3. Programmatic. Five days seems to be the most appropriate time to spend on the 70-plus mile run. It could be done in four but the course would suffer; a three-day run would impair the safety of the course. Longer courses are certainly appropriate but would lessen the number of courses we run in a season. Generally two courses are run simultaneously.

C. Campsite itineraries. Five on-river days

		Course #1	Course #2
Day	1	Deerlodge Park	Deerlodge Park
	2	Tee Pee Falls	Big Joe
	3	Harding Hole #1	Harding Hole #4 or Mather Hole
	4	Warm Springs	Box Elder

Day 5	Jones Hole #1,2,3,4,5,6,7 or The Cove	The Cove or Jones Hole #1,2,3,4,5,6,7

). Sample program

Day 1

8 a.m.	Staff packs and loads trip - lunch and course briefing.
1 p.m.	Staff leaves for Deerlodge..
3-3:30	Staff meets participants. Raft crew assignments, gear check-out, pitch camp, ready gear.
5:30	Dinner, course orientation.
9-10	Turn in.

Day 2

	First light rise and begin breakfast and packing.
6 a.m.	Breakfast - rig and pack boats - safety lecture.
10	On river.
11	Current and eddy lecture at Anderson Hole. Group #1 may lunch here. Group #2 on to Tee Pee Falls.
12	Group #2 lunches and runs Tee Pee - down river and runs Little Joe.
1-2	Group #1 camps at Tee Pee and hikes in afternoon.
4:30-5	Group #2 camps at Big Joe.
6	Dinner and evening campfire.
9	Students usually very tired, turn in early.

Day 3

Rise at first light. Breakfast.

Group #1 rigs and runs Tee Pee, Little Joe, and Big Joe, and arrives at Harding Hole for lunch.

Group #2 hikes in Starvation Canyon then runs Big Joe and arrives at Harding Hole or Mather for lunch.

Afternoon of hiking - Harding Rim - Meeker Cave etc.

Dinner - evening program is an academic exercise.

Day 4

Rise at first light - breakfast and on river promptly.

Group #2 runs ahead, lunch and hike, Mantles Cave.

Group #1 lunches and hikes to Mantles Cave.

Group #2 arrives and runs Warm Springs - 4 p.m. on to Box Elder.

Group #1 arrives and runs Warm Springs - 4:30 p.m. camps.

Dinner and evening programs.

Day 5

Rise early - leisurely day on river, much hiking and exploring, Sand Canyon, Echo Park, Mitten Park, Jones Hole. Camp mid-afternoon Jones Hole or The Cove. Evening, plans are made for final expedition.

Day 6

Final expedition through Split Mountain Canyon predominantly an on-river day. Course debriefing and lunch after final rapid. Off-river early afternoon.

Green River Courses Dinosaur National Monument

A. Season

Due to the controlled flow of the Green by Flaming Gorge Dam, the river generally has sufficient water to run it any time. Our season starts in mid-June when the Yampa often becomes unrunnable, and continues through August. Flows average about 3000 cfs but daily fluctuations sometimes drop to under 1000 cfs.

B. Special considerations

1. Clients run the full range of the variety of people we deal with. Predominantly the courses are adult.

2. Logistics. The embarkation point is Gates of Lodore Campsite about 180 miles from Vernal, 3½ hours. Take-out is same as Yampa course, Split Mountain boat ramp.

3. Programmatic. River can be run in three days, and some clients, such as businessmen, are restricted to such short courses. Generally four days serve our needs better and the vast majority of clients can afford the time. The run is less than 50 miles but courses of five or more days are appropriate if lots of off-river activities are planned. However due to the amount of use in the canyon and the prevalence of well-established campsites this run is generally not the wilderness experience one would prefer. By far the greatest potential for this run is in the program development courses we run for educators and businessmen to give them a mini-experience of OB. Once again, two courses can be run simultaneously.

C. Campsite itineraries. Four on-river days

		Course #1	Course #2
Day	1	Gates of Lodore	Gates of Lodore
	2	Upper or Lower Pot Creek	Upper or Lower Pot Creek or Triplet Falls
	3	Rippling Brook, Wild Mountain, Stateline or Jones	Same options as #1
	4	Jones Hole or The Cove	Same options as #1

The run-out from Jones Hole on low water is a long one for the last day. If possible the Cove is a slightly better place to camp the last night.

D. Sample program

Day 1

8 a.m.	Staff picks up food - packs and loads trip. Lunch and course briefing.
1 p.m.	Staff leaves for Lodore.
4:30-5	Staff meets participants, raft crew assignments, gear check-out, etc.
6	Dinner and course orientation, to bed.

Day 2

Rise early, breakfast - rig and on river mid-morning.

First current and eddy lecture, Little Stinker.

Run Little Stinker and hike Winnie's Grotto.

Lunch midday.

Run Disaster Falls and camp Pot Creek.

Supper and evening program.

Day 3

Rise early, breakfast.

Run Triplet Falls, Hell's Half Mile.

Lunch.

Hiking Echo Park, Mitten Park.

Camp early afternoon Jones Hole.

Hiking, dinner and campfire.

Day 4

Further hiking and activities at Jones Hole until midafternoon, evening float to the Cove. Dinner, final campfire and plans for final expedition.

Day 5

Final expedition through Split Mountain Canyon. Lunch and debriefing below last rapid. Off river midafternoon.

Colorado River Cataract Canyon Canyonlands National Park

A. Season

Heavy runoff flows through Cat in the spring, limit our operation to fall levels under 15,000 cfs. Courses could begin as early as August 1, but flow generally stabilizes at about 6 or 7,000 cfs in mid to late August. Generally we run the canyon through September and early October. The weather is generally mild and dry and the water luxuriously warm. Our allocations for use of this canyon would permit a longer season and future trips starting in August are practical. However Cat trips are more expensive to operate and take more time, both on river and turnover time, and therefore enrollment may be limited.

B. Special considerations

1. Clients are generally adults, corporate groups and educators, open enrollment courses and special courses for alumni.

2. Logistics for Cat trips are complex and expensive due to the length of the run and the large amount of flat water. The base of operation is in Moab, Utah. We meet participants at the Potash Boat ramp 30 miles from Moab, and travel overland in vehicles to Lathrop Canyon, about a 2½ to 3 hour drive. Vehicles are contracted from a local Overland Concessionaire. A support boat is necessary for all trips, and a hard-hulled power boat is contracted to tow us across Lake Powell at the end of the course. We use a mobile warehouse in the form of a 22' bed van type rental truck.

3. Programmatic. Courses are generally 7 days. The program and safety of the course would suffer on any shorter trip. The Cat course probably offers the most dynamic OB experience of all the rivers we run and would benefit by being lengthened in some cases. An optimum experience would run entirely without the use of motorized craft, except in emergencies or for resupply and would combine further overland experience, rock climbing, and an extended solo. It

might be entirely within reason to run a traditional 23 day course in Canyonlands. Only one course at a time (of 3 or 4 boats) is run in Cataract.

C. Campsite itineraries. Seven on-river days

Day	1	Sheep Bottom
	2	Brown Betty Rapid
	3	Dolls House
	4	Brown Betty
	5	Island Rapid
	6	Mille Crag Bend

D. Sample program

Day 0

Staff rigs trip.

Day 1

5 a.m. Support boat leaves Potash for Lathrop Canyon with boats and gear.

9 Meet participants arriving via charter bus from Grand Junction. Embark in overland vehicles for interpretive drive to head of Lathrop Canyon. Hike down four miles to river. Lunch. Rig boats and on river to Sheep Bottom, camp and course orientation.

Day 2

Rise early, breakfast, on river to Indian Canyon and ruins, on to hike over the Loop. Lunch - motor or paddle to Spanish Bottom. Overlook and run Brown Betty - camp and prepare for Doll House expedition.

Day 3

Early breakfast and hike to Dolls House. Climbing, hiking, and solo late afternoon.

Day 4

Off solo midmorning - further exploring and return to Brown Betty late afternoon, dinner and debriefings.

Day 5

Rig early and run Little Upset and rapids 2-10. Lunch around mile 208-206. Run Mile Long series and Island Rapid - rapids 11-20. Camp below Island Rapid.

Day 6

Early rise, breakfast and on river. Run Big Drop series and out to Lake Powell rapids 21-25, 26 or 27. Meet resupply boat, lunch - tow to Mille Crag Bend. Camp - course debriefing.

Day 7

Early rise, breakfast, paddle or tow to rappel site. Rappel - lunch, tow out to Hite Marina. Off river and on charter bus for Grand Junction midafternoon.

Appendices

a	Equipment Lists	ii-vii
b	Ideas for Menus, and Cooking Guide	viii-xvi
c	Sanitation Guidelines	xvii-xxvii
d	Raft Maintenance and Repair Guides	xxviii-xxxii
e	Emergency River Techniques	xxxiii-xxxiv
f	Emergency and Evacuation Guide to Roadheads and Points of Communication	xxxv-xxxvi
g	Vehicles	xxxvii-xl
h	Course Report Form	xli
i	River Mileages and Elevations	xlii-xliii
j	Suggested Reading List	xliv-xlvii

REFER TO COBS INSTRUCTOR'S HANDBOOK FOR:

COBS Emergency Notice Form
Notification Sequence
Helicopter Alert
Accident Report Form
First Aid Syllabus

Appendix a

Equipment Lists

1. Crew Boating Gear

Each boat

Grab line - securely fastened, approximately 40' gold line
Bow line - approximately 30' gold line securely fastened
Bowline coil tie - approximately 2' alpine cord on bow "D"
1 serviceable life jacket per crew member and 1 spare
1 paddle per crew and 2 spares
2 bail buckets and ties or snaps
Tie-in ropes to secure load
2 camera boxes - available if needed - 50 cal. silver
1 resource box - 30 cal. yellow, to contain:
- Belknap Guide - appropriate river
- Topographical maps
- Geologic References
- Biological References
- Selected readings
- Other materials as instructor chooses

Each trip

2 First Aid Kits	2 Patch Kits
50 cal. white w/red cross box (1 in lead boat, 1 in sweep box)	50 cal. red box (1 in lead, 1 in sweep)
2-ace bandages	1 pt. Barge glue
1-2" roll adhesive tape	1 pt. Barge thinner
1-Bar soap	1 sq. yd. Neoprene 38 oz. patch material
1-Bottle Polymagma	Wire brush and/or emery cloth
1-Bulb syringe with tubing	1/16" heavy nylon thread
1-Moleskin 9" x 18"	1 set heavy duty curved needles
1-Space blanket	1 pair scissors
1-Spool thread	1 knife
2-Surgipad dressing	1 screw driver
1-Bottle Tincture of Benzoine	1 pair pliers
1-Bottle Oil of Cloves	2-3 ft. bailing wire
1-Nail clippers	extra pump parts
1-Package of 8 Pamprin tablets	hose clamps
6-Safety pins	extra LJ clips
1-Scissor	

First Aid Kits (continued)

1-Thermometer
1-Tweezer
1-Tube Neosporin Ointment
1-Tube Zinc Oxide
1-Vial Aspirin tablets
1-Vial Coricidin tablets
1-Vial Milk of Magnesia tablets
1-Vial Salt tablets
20-Bandaids 3/4"
8-Gauze pads 4" x 4"
8-Telfa pads 3" x 4"
6-Accident Report forms
6-Emergency Notice forms
1-First Aid Booklet
2-Golf pencils
1-Mountaineering Medicine booklet
1-Stuff sack (parka size)

1 Sweep Kit

River bag, silver
(sweep boat)

1 pump and hoses
1 150' work rope
1 patch kit
1 First Aid Kit
1 roll boat tape
2 inflatable splints
1 large electric flashlight

First Aid Resupply Box

100-Bandaids
1-large roll Moleskin
14-tubes Zinc Oxide
4-triangular bandages
3-bars of soap w/dishes
2-First Aid booklets
12-rolls 2" adhesive tape
100-gauze pads 4" x 4"
100-Telfa pads 3" x 4"
4-ace bandages 3"
1000-aspirin
100-cold tablets
1000-salt tablets
100-Milk of Magnesia tablets
2-pair scissors
2-tweezers
2-nail clippers
36-safety pins
3-thermometers
12-empty plastic vials
2-Oil of Clove
3-airway tube
3-Tincture of Benzoine
3-space blankets
1-metal box
200-Halazone
2-bulb syringes
8-Polymagma
4-surgipad dressing
4-Neosporin
4-tubing
4-spools of thread
4-Pamprin tablets
2-Mountaineering Medicine booklets

Each instructor will carry readily accessible:

knife
matches in waterproof container
spare alpine cord, 30'

The Course Leader will also carry a drug kit.

National Safety Policy now includes the following provision:

"Each drug issued to each instructor should be held accountable and a written report submitted to the Chairman of the local Safety Committee each time any of the drugs... is used. This should include a description of the indication for use, amount given, etc."

The following control and reporting procedures will insure compliance:

1. Logistics coordinators will be issued drug kits for their courses which they in turn will issue to Course Directors and Chief Instructors. These kits will be issued, signed for, and returned at the end of each course like other course equipment and returned to Denver at the end of the summer. Logistics coordinators will also have a small quantity of drugs for replacement which also must be requested by the Course Director or Chief Instructor.

2. Course Directors and Chief Instructors are accountable for all drugs issued to them, including the kits they assign to instructors. The Course Director/Chief Instructor also is responsible for providing the Program Director with the data required by National Safety Policy.

3. The Program Director will submit a written report to the Chairman of the Safety Committee via the School Director.

Instructors are not authorized to give injections on courses at this school, and any administration of the medications below must be reported to the Course Director and ultimately to the School Director and Safety Committee.

Instructors are reminded that they are obligated to provide any treatment commensurate with their training and abilities, but also must exercise their utmost prudence in avoiding unwarranted administration of prescription drugs.

The following will be issued to each instructor at the start of the course and must be returned to the Course Director at the termination of the course.

1. Demerol; 50 mg. tablets, number 8; for severe pain. To be administered only when victim has severe pain other than from head or chest injury.
   Dosage: Two tablets every 4 hours.

2. Benadryl; 50 mg. capsules, number 8; for allergies. To be administered only when victim has severe allergic reaction.
   Dosage: One or two capsules per day.

2. Support boat gear

Without motor

- frame and floor boards
- attachment devices - chain, links, snaps, webbing
- 2 oars and 2 spares
- 1 LJ per crew member and 1 spare
- 2 bail buckets
- attached bowline, 30-40' gold line
- tie-in rope
- tarp
- Stokes litter
- sweep box with modified repair kit to include:
  - standard repair kit contents
  - assorted carriage bolts, nuts, washers
  - assorted wood bits
  - adjustable wrench
  - hack saw and 2 spare blades
  - screw driver
  - socket wrench and appropriate sockets
  - hose clamps
  - ballpein hammer

With motor

- all the above
- motor and safety chain
- motor mount
- gasoline and oil tank and hose
- license and registration
- motor box to include:
  - spare prop
  - spare spark plugs
  - spare pull cord and assembly
  - spare gasoline hose
  - more bailing wire
  - siphon hose
  - lower unit grease and applicator
  - spark plug socket
  - ½" socket set
  - assorted combination box - open end wrenches
  - assorted screw drivers
  - points file
  - feeler gauges
  - motor manual

3. Dunnage

Outward Bound supplies to each participant:

1 sleeping bag and stuff sack
1 sleeping bag liner
1 foam pad
1 ground sheet
1 canteen
1 rain suit (Helly Hansen pants and jacket)

Outward Bound supplies to each pair of participants:

1 delousing bag
1 waterproof expedition bag and closure

Outward Bound supplies each crew:

1 waterproof day bag
2 12' x 12' rain flys

Participants supply:

*long pants, 1 wool (G.I. or Goodwill)
long pants, 1 cotton
tee shirts, 1 or 2
*heavy wool sweater or sweatshirt
medium weight jacket
shoes, 2 pair - 1 pair of canvas for boating plus a light boot to wear in camp and hiking up side canyons. (If possible, avoid bringing heavy mountaineering boots. Light hiking boots are adequate and conserve space. Boots should fit and be well broken in!)
wool socks, 2 pair
change of underwear
*wool cap for sleeping
flashlight with batteries
matches in a waterproof container
swimwear or shorts
hat with wide brim or visor
towel - small
long sleeve shirts, 2
suntan lotion
sunglasses - with keeper straps
belt

*necessary only in April, May, and early June

<u>Optional items</u>

work gloves, lightweight - only if your hands are particularly tender
handkerchiefs
chapstick

pocket knife
camera and film
toilet articles - keep to a minimum
plastic bags
books, notebooks
insect repellent - non-aerosol

4. Kitchen equipment and supplies per trip

Each individual will have:

1 cup
1 set knife, fork, spoon } carried in common storage
1 plate tray

Each group will have:

2 fire pans and grills when required
2 14" dutch ovens - each feeds approximately 15
2 griddles
2 coffee pots
2 6-8 quart soup pots
2 2-3 gallon galvenized pails
2 spatulas
2 large spoons, 1 slotted, 1 solid
1 large butcher knife
4 scrubbing tools
2 can openers
1 utensil box, 30 cal. silver, to include:
    group silverware
    1 can opener
    1 box kitchen matches
1 spice box, 30 cal. blue, contents under supplies
2 water jugs per raft crew - add more to support boat when necessary
Halazone tablets, 100 tablets per 6 gallons of anticipated water to be treated
waterproof river bags, food lockers, coolers as necessary

Group supplies:

1 quart dish washing soap per 4 or 5 days
1 quart clorox
paper towels, 1 medium roll for 2 days
trash bags - large capacity, 1 box of 6 per 2 or 3 days
2 quarts cooking oil
1 roll aluminum foil
1 spice box to include:

1 box kitchen matches	salt
pepper	sugar
chili powder	cinnamon
Tabasco	other assorted

Appendix b

Ideas for Menus, and Cooking Guide

Quantities for 30 people

Beverages 2 gallons

Wyler's
Tang
milk
chocolate milk
iced tea
hot tea
coffee

Soups (dehydrated)

whatever - 4 boxes (8 pkgs.)

Salads

fruit salad
mandarin oranges
tropical fruit (7 #303 cans
fruit for salad or equivalent)
2 pkg. walnuts
1 pkg. marshmallows
nutmeg

greenbean and egg
green beans #10 can
2 cans garbanzo beans #303
12 eggs (hard cooked)
2 pkgs. good seasons
oil and vinegar

lettuce and tomato
4 heads lettuce
10 tomatoes
2 cucumbers
2 pkgs. good seasons
oil and vinegar

Vegetables (canned 1 10#)

peas
green beans
corn plus 2 #303 cans
mixed vegetables
spinach
apple sauce plus 2 #303 cans
potatoes (fresh and canned)
fresh corn on cob (1 per person)
fresh artichokes
fresh asparagus
fresh cauliflower
fresh broccoli
fresh squash

Waldorf salad
18 apples
2 stalks celery
1 box raisins
2 pkgs. walnuts
1 pint mayonnaise

cucumber salad
18 cucumbers
4 bell peppers
2 pkgs. good seasons
oil and vinegar

tomato salad
18 tomatoes
4 red onions
2 pkgs. good seasons
oil and vinegar

Salads (continued)

cole slaw
- 1 red cabbage
- 1 green cabbage
- 2 cans crushed pineapple
- 2 red onions
- 1 jar relish
- 1 pint mayonnaise

carrot and raisin
- 4 bunches carrots
- 2 cans crushed pineapple
- 1 pint mayonnaise
- 1 box raisins

potato salad
- 1 can potatoes #10
- 12 eggs (hard cooked)
- 1 pint mayonnaise
- mustard
- 1 jar sweet relish
- 2 onions

Spices

sugar, white 3/4 lb. per day
sugar, brown 1/4 lb. per day
honey ½ lb. per day
salt 2 12 oz.
pepper, 1 large spice can
cinnamon
nutmeg (pancakes)
thyme (meat, salad, soup)
rosemary (meat, salad, soup)
sage (meat, salad, soup)
oregano (spaghetti)
cloves (ham)
onion flakes
garlic (spaghetti, meat)

Miscellaneous

artichoke hearts
wine
vinegar
A-1 steak sauce
soy sauce
ketchup

Breakfast

fresh or canned bacon 4-5 lbs.
fresh or canned ham 4-5 lbs.
sausage 80 links
corned beef hash 8-10 #303 cans
and 2 dozen eggs

pancakes (complete mix)
mix with fruit or nuts and nutmeg
syrup

french toast (3 loaves of bread)
2 dozen eggs, milk, cinnamon
sugar

eggs 4-5 dozen (scrambled, omelette,
fried) milk, onions, bell peppers,
asparagus or mushrooms

grapefruit/melons
granola 1-2 lbs. } either
hot cereal 1 box }

Breakfast (Dutch Oven)

Blueberry Cobbler
5 boxes mix
5 eggs
butter

Cinnamon Rolls
1 large box bisquick
4 eggs
milk, sugar, butter
raisins
cinnamon
nuts (walnuts)
nutmeg

Lunch

4-5 loaves of bread/crackers (a loaf a boat a day)
1 lb. peanut butter
12 oz. jam
1 pint mayonnaise
mustard
1 jar relish/pickles
salami (dry) 2-3 large sticks
chicken 3 large cans or 6 small cans
sardines 3 large cans or 6 small
tuna 3 large cans or 6 small
corned beef 3-4 large cans
salmon 3 large cans or 6 small
olives 1 can medium pitted
nuts 1 large can
cheese 1-1½ lbs.
cherry peppers 1 jar
carrots 1 bunch alternate
celery 1 bunch
oranges/apples every third day
candy 2 pkgs. alternate
cookies 1 pkg.
dried fruit 1 pkg.
punch 2-3 gallons Wylers, iced tea
lettuce
tomatoes

(x)

Entrees - Main Course

1. Lamb Chops
   lamb chops
   20 oz. brown rice
   herb gravy
   sliced onion and green pepper

2. Meat loaf
   9 lbs. ground beef
   6 lbs. ground pork
   1 stalk celery
   2 bell peppers
   1 #303 can tomato paste
   4 yellow onions
   1 12 oz. can mushrooms
   box croutons
   6 eggs

3. Spaghetti
   8 lbs. ground beef
   2 cans mushrooms 12 oz.
   3 onions
   3 bell peppers
   3 cans tomato paste
   3 lbs. spaghetti
   1 large can parmesan cheese

4. Spaghetti
   substitute meatballs for fresh meat
   4 large cans meat balls

5. Clam Spaghetti
   3 lbs. spaghetti
   1 lb. margarine
   3 yellow onions
   3 bell peppers
   1 jar garlic salt
   10 cans clams
   2 cans mushrooms 12 oz.

6. Beef Stroganoff
   8 lbs. cut round ½" cubes
   2 pints sour cream or mix
   2 cans mushrooms 12 oz.
   4 yellow onions
   1 bottle bouillon cubes
   3 lbs. noodles

7. Beef in Sauce
   - 8 lbs. round ½" cubes
   - 3 cans mushroom soup
   - 3 cans mushrooms 12 oz.
   - 3 yellow onions
   - 2 bell peppers
   - ½ bottle red wine
   - 3 lbs. noodles

8. Pork Chops
   - pork chops
   - 3 sliced onions
   - 3 sliced bell peppers
   - 20 oz. brown rice

9. Beef Stew
   - 8 lbs. stew meat
   - 10 lbs. potatoes
   - 1 bag carrots
   - 2 cans mushrooms 12 oz.
   - 3 onions
   - 1 stalk celery
   - 1 can peas #2½
   - 1 can green beans #2½

10. Macaroni and Cheese and Ham
    - 6 large boxes macaroni and cheese
    - 2 6# hams
    - 2 yellow onions

11. Shrimp Curry
    - 10 cans medium shrimp
    - 4 cans mushroom soup
    - 4 cans cream of chicken soup
    - 1 can mushrooms 12 oz.
    - 2 boxes curry powder
    - 1 pkg. coconut
    - 1 pkg. raisins
    - 1 pkg. walnuts

12. Chicken and Rice
    - 10 cans boned chicken
    - 4 cans cream of chicken soup
    - assorted spices
    - 7 boxes Rice-a-Roni (fried)
    - 1 jar parsley flakes

13. Steak Dinner
    - steaks

14. Sweet and Sour Ham
    - 5 cans sweet and sour sauce or 5 cans yams
    - 2-3 3 lb. canned hams
    - 3 bell peppers
    - 3 onions
    - 2 cans pineapple chunks
    - 2 20 oz. brown rice

15. Honorable Oriental Dinner
    - 1 can chow mein noodles #10
    - 1 can chop suey vegetables #10
    - 2 cans sweet and sour sauce
    - 1 can mixed vegetables #10 or fresh vegetables

16. Fresh Vegetable Dinner
    - 6 lbs. broccoli
    - 6 lbs. cauliflower
    - 4 lbs. Italian squash
    - 4 lbs. crookneck squash
    - 4 lbs. Monterey Jack cheese
    - 2 20 oz. brown rice
    - 1 large can cashews

17. Cashew Chicken
    - 10 cans boned chicken
    - 1 can cashews
    - 3 bell peppers
    - 3 onions
    - 2 cans mushrooms 12 oz.
    - 2 20 oz. brown rice

Desserts (15-16" Dutch Oven)

Strawberry Shortcake
- large box bisquick
- sugar
- eggs
- cinnamon
- strawberries (frozen) 12 pkgs.
- whipped cream - 3 cans
- nutmeg

Gingerbread
- 2 cans pineapple slices
- 5 boxes mix
- whipped cream

Brownies
- 3 boxes mix
- 10 eggs
- 2 pkgs. walnuts

Banana Nut Bread, Cherry, etc.
- 5 boxes mix
- 10 eggs
- 2 pkgs. walnuts

German Chocolate Cake
- 5 boxes mix
- 10 eggs
- icing

Cobblers

5 cans berries (in water)
3 boxes yellow or lemon cake mix
6 eggs
whipped cream
nutmeg

Pineapple Upside Down Cake

3 cans pineapple rings
1 can crushed pineapple
3 boxes yellow cake mix
1 jar maraschino cherries
nutmeg and honey
6 eggs

Cooking

The success of a river course can be traced to many things but the failure is an astounding number of cases can be traced to meals, their lack of edibility, their poisonous nature due to bad sanitation or bad ingredients, or their poor timing. While OUTWARD BOUND is a learn-by-doing adventure, there is no point in letting the students learn that poor meals can ruin a trip by letting them produce them. This calls for tactful but sometimes very directive back-seat driving.

To insure that everyone eats (see hypothermia p. 16) and that everyone gets a positive experience from mealtime, some of the following points may be useful to the instructor: 1) boat crews can be inspired to outdo one another, 2) good kitchen arrangement and management generally mean good meals, 3) four people can usually do a better job than eight, 4) kitchen tools are equipment to be learned about and cared for, 5) limited portions require doling rather than self service, 6) a meal served after bedtime may require you to wake people up, 7) one dutch oven will feed 12-15 people.

Dutch Ovens

A dutch oven is a heavy iron pot with a tight fitting iron lid. It may be used to cook anything to near perfection if used properly. However, Outward Bound rarely has the time, resources, or perfect students to accomplish that. As a result, we have discovered that some of the dutch oven myths need to be discarded. First, a huge pile of hot coals is a wasteful luxury for a master with lots of time; flaming sticks work quite well with a little care. Second, a seasoned pot, shiny black from years of hard use and proper care, is a coveted treasure to those who own one, but it has little merit with OB's typical meal.

The dutch oven is generally used to prepare a dish that is to be served directly from it, scrambled eggs, stews, etc., rather than indirectly as with boiled eggs, heating dish water, etc. In preparing the main meal, one must be ready to do....THE FIRE DANCE.

When you hit the beach after a long day, first de-rig the boat, carry equipment to the kitchen and start the fire. If you only have an hour to get a chicken ready, start the meal by working with chicken and dutch ovens. When you dig the pot out of its bag it may have in it leftovers, sand, rust, or all of the above, in which case you must clean it using the following procedure. Dump out the solids, scrape the sticking junk out, wipe it out, heat dutch oven moderately and oil it, wipe it, and repeat if necessary till you would be satisfied with eating the wipings, because you will eat them.

Next, get out the assorted other equipment not already in use, fire pans, shovel, pliers, and kick all non-cooks and non-hypothermia victims out of the area. Arrange the traffic patternsn to your liking, and wash your hands. Mess with the food till it gets ready to heat, then torch it up.

Remember, the more liquid something has in it, the less likely it is to stick and burn regardless of the fire conditions. The less liquid, the more carefully the fire and food have to be tended.

Cases in point:

Scrambled eggs; they start very runny and require little care, but as they stiffen, you have to tend them better.

Bacon and sausages; they start with little liquid, so be careful at first till they exude enough grease to protect themselves.

Stews; will stick and burn over a hot fire if they are too thick, but a runny mix will care for itself in an inferno. This may require adding fluid occasionally.

Once all the food that will sell is sold, it is an easy matter to clean the dutch oven. Remove the solids to the trash bag or the food bag, dump the liquids into a convenient outhouse hole (some take exception to this because the grease may inhibit septic tank action), scrape the sticky goop out, heat the pot moderately and oil it. And al alternate method to scraping is to put warm soapy water in the pot and wash it. Either way, be sure to heat it and oil it before stowing in its river bag.

Discourage these three practices: 1) heating the cleaning water directly in the dutch oven, as this will surely remove nearly all the rust protection you've just cooked into it, 2) scouring it with sand, as this leaves a layer of silt to eat at the next meal, 3) leaving the mess for the next crew to clean up.

If you are not now a dutch oven artist, one of the best ways to become one is to start making biscuits, cobblers, cakes, pies, yeast bread, doughnuts, etc. Making these items will quickly show you the value and techniques of fire control and equipment handling. Though not usually possible with a large group, serving a batch of cornbread with your crew's chili can really expand the imagination.

I. SANITATION GUIDELINES Appendix c

A. Section 1

Communicable Disease: Causes, Transmission and Control

Diseases are often classed by the part of the human or animal body that is generally involved. Therefore, we have such terms as upper respiratory diseases for those that affect primarily the nose, sinuses, throat and bronchial tubes and gastro-intestinal illnesses for those that affect primarily the stomach and intestines. The latter are often referred to as the G.I.'s. The organisms that is bacteria and viruses, of greatest concern on a river trip are the following: Shigella, Salmonella, Clostridium perfringens, streptococcus, staphylococcus and bacillus cereus. All of these produce illness by infection, except staphylococcus which produces a powerful toxin, or poison. Most of these organisms cause gastro-intestinal illness characterized by nausea, vomiting, cramps, diarrhea and fever.

The gastro-intestinal illnesses are the ones that are of primary public health importance in developing sanitary food, water and sewage disposal systems and procedures. The organisms that cause these illnesses are normally taken in by mouth and pass out through the lower intestinal tract. Frequently they are contaminants in food and water that are improperly handled or treated. They can also be spread by direct contact from person to person. This direct contact method of transmission is referred to as fecal-hand-mouth i.e., bacteria or viruses from the intestinal tract contaminate the hands and are then carried into the mouth and swallowed. Once in the intestinal tract they may produce sufficient numbers to cause illness.

The usual source of gastro-intestinal organisms is the human intestinal tract. Staphylococcal bacteria, however, are normally found in the nose or in boils and infected skin lesions. Under suitable circumstances, they produce

a powerful toxin that causes severe gastro-intestinal illness. Once this toxin is formed it will not be destroyed by heat. Staphylococcal bacteria usually find their way into foods on the hands of a food handler who has boils or wound infections or has had his fingers in his nose.

In addition to the human sources, which may be passengers or crewmen, certain meat and poultry products may be contaminated with diseased organisms at the slaughterhouse or butcher shop. Such products need only to be left unrefrigerated for growth of the bacteria to take place. If these foods are inadequately cooked the bacteria survive. Lack of refrigeration results in tremendous growth of the organisms. Disease organisms in meat and poultry products also will result in the contamination of knives and grinders, food preparation surfaces, and the hands of the food handler during preparation and handling. This, in turn, leads to contamination of other foods.

The contamination of food alone does not necessarily mean that it will produce illness. The "contaminating dose" of an organism may be too small to produce illness. Each type of organism has a characteristic "infective dose" which varies from one type of organism to the next. Some diseases require relatively few organisms in the infective dose. Others may require an infective dose of several million organisms. There is also the situation where the organisms must first produce a toxin.

Following contamination of a food, it is usually necessary for reproduction of the bacteria to take place before an infective dose is developed. In order for a contaminating organism to grow or reproduce enough to develop an infective dose or a large amount of toxin, three factors are required: time, temperature and nutrient source.

Under ideal conditions a single bacterium may reproduce itself in 10-30 minutes. At this rate one organism will produce many millions in a 12 hour period. Since a typical infective dose for one person numbers from a few

hundred thousand to several millions, it usually takes no more than 3-4 hours to produce enough bacterial growth to cause illness in a large number of people. This is especially true when the initial contamination involves a large number of organisms.

Temperature plays an important role in the preservation, growth and destruction of bacteria and viruses. Cold and freezing rarely kills them, but does prevent or inhibit growth. In fact freezing at very cold temperatures is a good means of keeping bacteria and viruses alive for long periods. On the other hand, temperatures above 167^{0} will readily kill bacteria and viruses alike and is important in their elimination from foods. Most of the disease organisms which are of concern will grow well between 77^{0} F. and 114^{0} F. with rapid growth occurring at 98^{0} F., the temperature of the human body.

Like all living things, bacteria and viruses require nutrients in order to survive and reproduce. Foods that offer excellent sources of the required proteins, carbohydrates, sugars, fats, etc., are: meat and meat products, poultry and poultry products, stews, gravies, salads made from ham and chicken, stuffings, slaws made with mayonnaise, cream and milk, custards, eggs and many others. In addition to the nutrients themselves, moisture is needed. Dried foods do not support the growth of disease organisms. It is also of interest to note that high concentrations of some nutrients will actually retard growth. A highly salted food especially when dried, is a good example; and jellies and candies are preserved for considerable periods of time because of their high sugar content.

If foods are contaminated with disease organisms at the time of purchase, and this is not uncommon with certain foods, it is important to prevent contamination of other foods during meal preparations. It is also important to cook the food sufficiently to kill the organisms present and not to recontaminate it after cooking. Once prepared for serving, hot foods should be kept hot and cold foods should be kept cold. This will prevent bacterial growth.

In order to prevent contamination of food during its preparation along the river, personal and environmental cleanliness are vitally important. No one with the symptoms of a communicable disease, especially diarrhea, should be allowed to prepare food for others. Neither should anyone with infected wounds or boils be permitted to handle food. As disease causing organisms often get into food on the hands of a person preparing food, scrupulous personal cleanliness is important. Washing the hands with soap and water is essential after going to the toilet, handling raw meat and poultry, putting fingers in the nose or handling objects that may be contaminated.

All surfaces with which food comes into contact during preparation, including knives, utensils and tabletops, must be clean and sanitary. Tables and equipment used for preparing raw meats and poultry should not be used for cooked foods until they have been cleaned thoroughly. Food poisoning outbreaks have occurred when cooked turkeys were sliced on the same meat blocks used for cleaning and preparing raw turkeys.

The means by which foods become contaminated with disease organisms and the subsequent processes through which these organisms pass in order to become dangerous to human health dictate the procedures necessary to interrupt the chain of events leading to an outbreak of human illness. Briefly stated these procedures are:

1. After going to the toilet or handling raw meat or poultry, wash hands with soap and water before handling and preparing foods.

2. Cooked or other prepared foods should come in contact only with clean and sanitized surfaces, equipment and utensils. Equipment used for raw foods should be washed and sanitized before using them on cooled foods.

3. Persons with communicable diseases, infected wounds on the hands and arms or boils should not be allowed to prepare food.

4. Stored perishable foods should be kept at temperatures below 45^{o} F.

5. Foods such as meat and poultry products should be cooked at a temperature and for a period of time adequate to destroy all disease organisms.

6. After preparation and prior to serving, keep hot foods hot, and cold foods cold.

7. Leftover perishable food should be discarded or refrigerated immediately in clean and protected containers.

8. Leftover perishable food should be thoroughly reheated before use.

B. Section 2

Guide to Equipment and Facilities

The recommended equipment and facilities are as follows:

Handwashing:

1. A running water supply consisting of a covered water container with a spout at the bottom, or a plastic jug with a hole and cork near or at the bottom. Two of these are required - one by the toilet and one by the food preparation area.

2. A liquid or bar soap approved by the Environmental Education Office - must be biodegradeable.

3. Disposable paper towels. Towels used by more than one person are not acceptable.

4. Waste water container.

5. Chlorine liquid bleach. Other approved sanitizing compounds may be used, but chlorine is recommended.

6. Plastic eye dropper or other suitable measuring device.

Dishwashing:

1. Four (4) metal tubs or buckets large enough to immerse utensils being washed. Galvanized buckets are acceptable.

2. Several dishwashing mops (cotton, nylon net, or other suitable material) with a boilable handle.

Dishwashing: (continued)

3. Soap or detergent.

4. Tongs to retrieve dishes dropped into the hot water tub.

5. Clean, polyethylene or paper bags to store dishes and silver.

6. Disposable paper towels for wiping dishes unless they are air dried. Reusable towels or handi-wipes are not acceptable.

7. One or more large dish-rack suitable for air drying dishes and utensils, unless disposable paper towels are used.

8. Clean storage box or cabinet with cover for storing dishes, trays, silver, and food preparation utensils.

Drinking Water Storage:

1. Large polyethylene or metal water containers with tight fitting lids and spouts - at least two per trip. Cadmium or zinc plated containers are prohibited.

2. Commercial chlorine bleach.

Food Storage: (Non-refrigerated)

1. Plastic wrap, aluminum foil, or polyethylene bags for all unpackaged foods. Zip-lock bags are excellent.

2. Sealable cans, glass containers, plastic or foil pouches for storage of dried foods.

Food Storage: (Refrigerated)

1. A box of adequate size to hold all perishable foods and insulated to keep ice as long as needed. The inside surface must be smooth, non-absorbent and easily cleanable, e.g., molded fiberglass, polyethylene, stainless steel, aluminum, plastic coated wood or formica. It must have either a removable drain plug or a continuous drain setup.

2. An approved dial thermometer (probe type)

3. Ice purchased only from a licensed ice manufacturer or made in commercial ice makers, in sufficient quantity to last as long as perishable foods are to be kept and used. Dry ice is acceptable. It should be placed on top of the food. It will not last as long however.

4. Polyethylene bags in which to package the ice.

5. A rack or grate for bottom of ice chest to keep foods out of ice melt.

Food Service:

1. Cooking utensils should be stainless steel, aluminum or cast iron. Enamelware, graniteware and cadmium plated materials are prohibited.

2. Knives for exclusive use in food preparation. Personal knives should not be used.

3. Oilcloth, vinyl or other suitable covering for food preparation and service tables.

4. Food slicing and chopping board. It should be cleaned, replaced or resanded frequently. Special teflon-like cutting boards are available commercially. Soft absorbent woods such as pine should not be used.

5. Aluminum foil or plastic wrap for wrapping lids, pan covers, and foods.

6. Large serving spoons, forks, ladles and spatulas for serving food.

7. An accurate dial thermometer (probe type) for checking temperatures of hot foods, dishwater, etc.

8. Reusable eating utensils, trays or plates and cups (metal or plastic) or disposable single service eating utensils, plates or trays and cups.

Human Waste Disposal:

1. Portable chemical toilet (preferably the recirculating type).

2. Toilet paper (preferably the disintegrating type).

3. Bowl Brush.

4. Sanitizing chemical for cleaning the toilet bowl - chlorox.

5. Chemical to treat waste in toilet as recommended by the manufacturer of the toilet - a non-zinc containing chemical.

6. Shovel for digging disposal pit.

7. A sturdy holding tank if sewage is taken out of the canyon.

8. A fresh battery to operate recirculating type toilet.

9. A separate box or heavy bag in which to store toilet on boat.

C. Section 3

Guide to Sanitary Procedures

No matter how good the equipment and facilities are, the final responsibility for the prevention of diseases transmitted through faulty food handling techniques and procedures rests with the rafting instructors. The following procedures, if followed, will virtually eliminate the threat of diseases spread through food and water.

Refrigeration:

1. Surround foods in the cold box with bagged ice.
2. Drain ice melt from cold box frequently.
3. Check cold box temperatures each time it is opened. Temperature should be 45° F. or less in the warmest part (immediately under the lid).
4. Do not open cold box any more than necessary.
5. Refrigerate leftovers promptly.
6. When ice has melted use perishable foods within 6 hours.

Handwashing:

1. At a convenient height, set up a sanitized running water supply with soap and paper towels near the toilet and the food preparation areas. Use two teaspoonfuls of liquid chlorine bleach per gallon of water for sanitizing.
2. Wash hands after using the toilet, after handling raw meat or poultry and before preparing food for consumption.
3. Instruct passengers on hand washing after using toilet and before assisting in the preparation and serving of foods.
4. Maintain adequate hand washing supplies.

Food Handling:

1. Protect unpackaged foods from contamination by storing in plastic wrap, plastic bags, foil or lidded cans or jars. Protect dry foods from moisture until used.
2. Thaw frozen foods in the cold box or cook frozen. Do not allow to thaw at "room" temperature.

Food Handling: (Continued)

3. Disposable plastic gloves are recommended for all food handlers.

4. Have available an adequate number of serving spoons, forks, ladles, etc., so people will not use their own in the serving dishes.

5. Keep the cutting board clean. Scrub with hot soapy water and rinse after each use. Cooked foods can be contaminated by a dirty cutting board.

6. Keep all food utensils and tools clean. Store them in plastic bags when not in use.

7. Never use personal knives for food preparation or serving.

8. Use of oilcloth, vinyl or other suitable cover on all food preparation and serving tables.

9. Keep food preparation and serving table top clean. Wipe off all spills promptly.

10. Keep all food containers covered when not cooking or serving. Covers can be made easily with aluminum foil if there are no lids.

11. Check temperature of foods during cooking by using a probe thermometer in the center of the pot. The following minimum temperatures should be maintained during cooking.

Pork - 150 degrees	When properly cooked the meat will be white with no pink coloring.
Beef - 160 degrees	Should not be served rare.
Poultry - 160 degrees	Poultry should be cooked until the meat is tender and easily pierced with a fork.
Stews and Meat Pies - 165 degrees	
Reheated meats or gravy dishes - 165 degrees	Wrapping in foil will prevent excessive drying.

12. Tie back long hair when working in food area.

13. Wear shirts while working in food area.

14. Never store chemicals, disinfectants, etc., in same compartment with food.

Dishwashing:

1. Heat two large tubs or buckets full of water for dishwashing before preparing meals. Have a third or fourth bucket of cold water. Put approved detergent in the first bucket with cold water for washing.

Dishwashing: (Continued)

2. Put approved detergent in first hot water bucket for washing, clear water in the second for rinsing, and clear water and Clorox in the third for final rinse and sanitizing.

3. Reheat the wash and rinse water after the meal is prepared. The sanitizing rinse, i.e., the third bucket, may be reheated or sanitized with chlorine (2 teaspoonsful of chlorine bleach per gallon of water). Double the chlorine dose if water is cloudy or turbid.

4. Scrape plates or trays and dispose of garbage in accordance with solid waste instructions. Beach sand can be used to scour dishes.

5. Wash plates and utensils with a dishmop in the first and second tubs to remove grease and food particles. Water temperature in the second tub should be 120-140 degrees F.

6. Dip rinse in third tub. Water temperature should be 120-140 degrees F.

7. Immerse plates and utensils in the fourth tub for required time: 60 seconds for a chlorine rinse in lukewarm water; 30 seconds for rinse in hot water of 180 degrees F. or more. Heat sanitizing is quicker, but water temperature must not fall below 180 degrees F. Double the contact time if towels are to be used for drying.

8. Rack plates and utensils for air drying or wipe dry with clean paper towelling.

9. Place dry plates or trays and silverware in plastic bags and store in clean, dry location.

10. Wash and sanitize all food preparation and serving utensils and equipment in the same manner.

11. Reheat rinse water if temperature drops below 180 degrees F.

Drinking water: Preparation and Storage

1. Refill drinking water containers only form the center of the main channel or river, NEVER from tributaries or near shore where the water is apt to be contaminated. This applies only to known streams where water is drinkable, or in emergencies.

2. Add prescribed amount of chlorinating agent (eight full drops per gallon of water or sixteen drops if water is cloudy or turbid. (Approximately 1 capful per 5-6 gallon container if using Clorox.)

3. Mix thoroughly and let stand 30 minutes before using for drinking or mixing beverages. Filling containers and chlorinating 30 minutes before landing will save inconvenience and insure a safe water supply. Proper standing time will also dissipate any objectionable chlorine taste.

Drinking Water (Continued)

4. Keep lid on drinking water containers except when filling, chlorinating or mixing drinks.

5. Plan ahead so you don't run out on a hot day. Keep one full container in reserve.

6. Whenever possible carry enough pure water from public water supplies for the entire trip.

Solid Waste Disposal:

1. Burn all burnables in cooking fire.

2. Biodegradable garbage may be disposed of in the river.

3. Pack out all other garbage, cans and trash in empty food packs or other special garbage bags or containers. If food packs are used, line them with polyethylene bags.

Human Waste Disposal:

1. Set up portable toilets, where possible; at least six feet above the high water mark, 300 feet from normally used camping area and 50 feet from the river bank.

2. Add approved chemical as recommended.

3. Set up paper bags for paper waste.

4. Instruct passengers to use the toilet - not the ground.

5. When dismantling, dig a hole in the sand at least 18 inches wide and two feet deep, at least 300 feet from the camping area.

6. Burn paper toilet waste and bag in the hole.

7. Drain toilet contents into the hole or empty contents into holding tank for removal from river at end of trip. Flush and rinse the toilet with several buckets of water.

8. Wash and sanitize bowl and seat with approved agent and rinse.

9. Store toilet in separate box or heavy bag.

10. Wash hands thoroughly.

11. Porta Potti Kit - 50 cal. ammo box, white, labeled, shovel or spade.
    toilet paper — matches
    PP chemicals — scrub brush and plastic bags

Appendix d

Raft Maintenance and Repair Guides

1. Maintenance

Prepare new boat by:

If black - paint with Gaco N700 A aluminum paint thinned one-to-one with Gaco N450-9 thinner. Paint in shade and warm temperature, use rollers for majority of job, brushes for finish work. Do not paint bottom of boat inside or out! Repaint as needed.

Blow in a pound of talcum powder if this was not done at factory. Do this once every 4 or 5 seasons.

Attach grab lines - approximately 40' of rope is needed - use 7/16" or 11 mm. rope. Should be tight between attaching points and secured to at least 6 attaching points, bow, stern, 2 on each side. Cut and secure leftover ends. This job is most easily done by first attaching the middle of the rope to an end "D" ring and then securing one side at a time. Retighten or replace as needed.

Attach bowline, 30' 7/16" or 11 mm. Secure with a fisherman's knot or short noose. Replace as needed.

Rolling up the raft:

- raft should be clean and dry
- fold in fourths crosswise
- pull bowline out one corner
- roll tightly (lengthwise) toward end bowline extends from
- secure roll with bowline, if possible wrap tarp around roll prior to securing
- a tightly rolled raft is a breeze to lift and carry. Curses to a loose and sloppy roll job!

Unrolling and inflating:

- when untying the roll never pull lines under the weight of the boat, lift and unwrap!
- get pump, two hoses attached and place inside raft, avoid pumping on solid or rocky surfaces. Protect bottom of raft with padding under the pump.

- determine which two outside chambers on an end to inflate first (according to placement of beam diaphragm) and inflate, standard recommended pressure 3 to 5 lbs. psi (about as much as a 160 lb. person can easily squeeze out of the pump).
- inflate other end sections.
- inflate cross tubes.
- top off all chambers each morning or as needed.
- beware of air expansion due to heat of day after inflating raft on cool morning, <u>especially cross tubes</u>, bleed accordingly.

Daily care:

- do not drag raft on shore, lift and pull and carry.
- avoid loading hard and heavy items directly onto the floor especially in the center compartment.
- avoid running into sharp protrusions from the bank or water, <u>SLEEPERS</u>!
- keep valves clean and free of grit and avoid pumping water into tubes.
- choose soft grassy landing sites when possible as opposed to gravel or rocks.
- when securing the boat while it still floats, avoid chafing as much as possible, pull up high on bank, tie tightly.
- when securing boat for night out of water, clean thoroughly, inspect for damage, carry above high water, place upside down and tie it up.
- avoid running a boat with a heavy bilge, either don't get wet, or bail!

Loading and storing:

- avoid snagging the boat on rough metal edges of a truck or trailer and place in a clean bed.
- store in dry protected place. Optimum storage conditions for extended periods of time would have the boat unrolled, slightly inflated and warm.

2. Repairs

Abrasions

- apply coat of Gaco N-29 to small holes or tears (less than ½ ") in floor.
- clean and dry area to be patched, remove all old paint and glue, work in shade.
- single patch will probably do for the smaller holes, double for larger, inside double for bad one

- rough up surface to be patched 3 inches around hole.
- if single patch is to be used bevel cut a rounded patch to extend 1 inch from all sides of the hole.
- rough up surface of patch to be glued.
- clean and prepare roughened surfaces with Barge solvent or toluene.
- apply as thin a coat of Barge glue as possible to both roughened surfaces and let dry until tack free.
- press patch over hole and roll down.
- apply a bead of Barge or N29 to edges of patch.

Large tears in floor:

- clean and dry surface to be patched.
- stitch up tear using a baseball stitch, a modified baseball stitch, or a lock stitch. The merit of any of these stitches over another is virtually nullified by the cover patch.
- rough up surface around area to be patched by at least 3" beyond width and length of tear. Clean and prepare with solvents.
- double patch should be used.
- bevel cut first patch to overlap tear from ½" for a short tear to 1½" for a long one. Round corners! Rough both sides solvent clean. Apply glue to one side of patch and total area to be patched.
- let glue dry to tack free and press patch gently down being careful not to disturb the glued area extending beyond the patch.
- apply glue to top of patch.
- prepare second patch, beveled cut, solvent cleaned, rounded corners, roughened surface, to overlap first patch by 1-3".
- apply when tack free and roll the double patch down.
- apply bead of N29.
- go inside boat and repeat double patch process.

Small holes in air chamber:

- always double patch as above to deflated chamber.

Large holes in air chamber:

- calm yourself.
- wrap emery cloth around your finger or (God forbid) your hand and rough up and clean with solvent inside the tube around hole.
- if hole will require stitches then begin stitching but leave an opening to get your finger back inside to glue. You may even have to glue and patch following your stitches.

- glue your fingers and coat the inside.
- prepare a patch, no need to bevel, and make it as big as you will be able to get inside neatly and securely.
- glue the patch and push it in with the handle of a pliers or a screw driver or something....and press it down from the other side (outside) of the tube.
- pull your stitches up tight and finish them off, then press and pound down the patch again.
- inflate the tube and apply a double patch to the outside.

Some tube leaks may require cutting a hole in the boat floor to get to the leak. A semicircular cut is advised.

Gritty, dirty, sticky or leaky valve - Peters and Russel

- it is an easy matter to remove the six small screws around the valve and take it apart.
- wash the parts clean with thinner or toluene
- apply a thin coat of light oil to bearing parts.
- These steps will usually stop a slow leak in a valve, however, if after cleaning you still have a serious leak, check two places: 1) within the valve around the inner seal or through the rivet in the valve plug, or 2) between the valve shoulder and the valve seat in the raft.
- a coat of Barge on the rubber seal will probably revive it, if not -
    - replace the seal with a new one if you have one, or ad lib a seal made from patching material and copious quantities of glue.
    - your plier handles can be used to re-rivet the valve plug.
    - spread glue on valve shoulder and on hard rubber valve seat in raft to stop the outside leak.
    - screw the valve back into the boat.

Destroyed or inoperative valve:

- replacing a Peters Russel valve can be done on the river but is generally impractical. For one thing you probably don't have a replacement valve with you and even if you did the job is long and tedious, with a good chance of limited or no success (you could cut a valve out of a seat tube). Jury rigging is best advised till you can get the boat into the warehouse or back to the factory.
- try to inflate the tube and plug up the valve or patch over it, remember the patch will have to come off later. In extreme need - outside tubes only.
- if the valve is stuck shut but will hold air, and the tube is deflated

- begin by cutting a 4" diameter semicircle around the valve (the cut that will later be necessary to replace the valve).
- stick your arm through the hole and puncture the beam diaphragm with your knife, one poke is enough.
- patch up the cut and inflate the tube through the adjacent valve.

- if the valve is stuck open, do the same thing but patch over the valve as well.

Appendix e

Emergency River Techniques

1. Wrapped raft

   a. All passengers move to downstream side of raft. Keep calm and assess the situation.

   b. Try shifting weight to one end of boat and bouncing and standing on floor.

   c. Other boats go for anyone overboard and any gear overboard, then try to assist disabled boat.

   d. Sometimes a careening blow from a passing boat may help dislodge it. Sometimes the careening boat will affix itself to the rock as well. Take care!

   e. If possible to do safely, stand in water or on rock and lift and push raft clear.

   f. If all the above fail consider a system to affix lines to the boat and pull from shore. If possible affix the pulling line around a seat tube or attach to multiple D rings to avoid pulling off a D. You may have to line passengers and duffle ashore. You may have to cut a hole in the floor. You may have to deflate appropriate tubes.

   g. If the raft still cannot be freed wait for the water level to change if feasible, and try again.

   h. If the raft must be left, line everything to shore, identify raft with a note on the shore. Do not leave a line to shore unless it is impossible to swim to raft. Do not block the better channel. Notify the managing agency and try again next week.

2. Raft stuck in a hole

   a. Keep all weight on downstream side of raft. Keep folks away from the hole.

   b. Attempt to orient raft and paddle to side and out.

c. It may be necessary to push against the rock making the hole, other rocks, or the shore, with a paddle.

d. If someone falls into the hole and gets stuck, grab them or give them something to hold onto to try to retrieve them. If they go down and don't come up they may be under the boat - stick a paddle or your leg under and push and grab.

e. It may be necessary to pull on a line from shore once the boat has swamped.

f. Toss a grab loop which is tied to your raft to a passing raft - it helps to have a carabiner to quickly clip into.

g. As a last resort - orient the raft - get ready to paddle and have someone jump into current holding tightly (NOT TIED) to a loop in the end of a bowline. Pick-up boat should be waiting if possible.

3. Raft flips

a. Priorities are:

(1) yourself
(2) other people on your raft
(3) equipment

b. If under raft - get out - do not stay and breathe in a pocket of air.

c. Get away from raft till end of rapid and float oriented feet downstream, don't struggle.

d. Try to keep track of everyone else.

e. Check underneath raft to see if someone is caught.

f. Don't worry about boat till you're sure everyone is O.K.

g. Other rafts should pick up people first, then gear.

h. Treat for shock and hypothermia and do other necessary first aid.

i. Retrieve and right raft.

Appendix f

Emergency & Evacuation Guide

to Roadheads & Points of Communication

1. Yampa River to confluence with Green

   a. Deer Lodge camp and boat ramp - mile 46.5 - roadhead, much activity, 12 miles to U.S. 40, 6 miles to Elk Springs, no phone, radio of ranger is about with one in his truck.

   b. Mantle Ranch in Castle Park - mile 12 - private habitation, sometimes unoccupied, roadhead, 33 miles to Dinosaur HQ road, often impassable in spring due to snow or rain, little traveled, 20 more miles to Dinosaur HQ on paved highway. No phone. Radio communication undependable.

   c. See lower Green River.

2. Upper Green

   a. Lodore Campground and Ranger Station - mile 243.5 - inhabited, phone, radio, much activity.

3. Lower Green

   a. Echo Park Campground and Ranger Station - mile 225 - roadhead, generally occupied, though often closed in early spring due to impassable roads. Range on duty, radio, undependable.

   b. Jones Hole Campground and Ranger Station - often no ranger in spring, no road, no radio, 4 mile trail to State Fish Hatchery, phone, radio, generally occupied, trail is inappropriate for litter evac at night, probably during day as well.

c. Rupple Ranch in Island Park - mile 213 - sometimes occupied, roadhead, 20 miles to Vernal, impassable when wet, no phone, no radio.

d. Rainbow Park Boat Ramp and Campground - mile 208 - sometimes occupied by campers, roadhead, 23 miles to Vernal, impassable when wet, no phone or radio.

e. Split Mountain Boat Ramp - mile 199.5 - much activity, roadhead, phone 5 miles, radio if ranger is there.

4. Cataract Canyon Colorado River

a. Potash Boat Landing - mile 46 - roadhead, 1 mile to Potash mine, phone, 20 miles to Moab. Some jet boat travel.

b. Lathrop Canyon - mile 23.5 - some jet boat travel, no services, seldom occupied, roadhead 50 miles via jeep trail to Potash.

c. Confluence - mile 216.5 - end of jet boat travel.

d. Spanish Bottom - mile 213 - Lower Red Lake Canyon Trail east, may find jeepers. Doll House Trail west, may find jeepers.

e. Lake Powell - mile 201 to 198 - much power boat travel.

f. Hite Marina - mile 168 - occupied, no phone, ranger on duty, radio, landing strip.

Appendix g

Vehicles

1. Any vehicle assigned to the program will be the responsiblity of the River Manager. The keys will be kept by the River Manager, who will decide on use of the vehicle.

2. A vehicle log will be kept showing date, mileage out, mileage in, driver, destination and purpose of the trip.

3. Vehicle maintenance, anti-freeze check, filters, oil change, lubrication, tune-up, etc., will show in the vehicle log.

4. Malfunctions, needed adjustments, needed service, or other attention will be noted in the vehicle log.

5. Individual driver is responsible for noting damage to vehicle prior to beginning a trip. This should be done in the log. In addition, an entry should be made regarding any dent, scratches, or other damage which the driver inflicts on the vehicle. The driver is responsible for all traffic violations, accidents, damage, and misuse.

6. Outward Bound vehicles will be used only for school business. They are NOT for the private use of the staff. Instructors are not to use any Outward Bound vehicle without approval of River Manager.

7. When Outward Bound gas pumps or gasoline supplies are available, the gasoline will only be used in Outward Bound vehicles.

8. Use of privately owned vehicles to transport staff or students, or for other legitimate reasons is sometimes unavoidable. When this is necessary, the driver should complete a requisition for disbursement, detailing the purpose of the trip, destination and miles traveled. When approved by the River Manager, the business office will pay 13¢ a mile. Approval of payment will be granted when:

    a. the purpose of the use of a privately owned vehicle is determined to be legitimate.
    b. an OUTWARD BOUND vehicle is not available to accomplish that purpose.

9. Only employees of Outward Bound are permitted to drive school vehicles. The driver must be properly licensed to drive according to Colorado state laws.

10. Colorado Department of Revenue, Port of Entry Office, requires all vehicles that weigh in excess of 4,500 pounds must stop at the Port of Entry or weigh stations in Colorado. As our vehicles weigh less than 4,500 pounds, they are not required to stop at Ports of Entry or Colorado weigh stations.

11. An Outward Bound credit card will be issued to the River Manager. Use of OUTWARD BOUND credit cards will be restricted to gas, oil, filters and necessary accessories and repairs to OUTWARD BOUND vehicles. In rare circumstances, it may be necessary to use the OUTWARD BOUND credit cards to gas or service privately owned vehicles. An example of such would be when a vehicle was needed urgently and money was not on hand for gasoline. In such an event, a note should be made to the logistics manager and reimbursement made as soon as possible.

12. In the event of an accident involving an OUTWARD BOUND vehicle, the following procedures will be adhered to:

    a. Report accident immediately to the appropriate local authorities. A driver must report any accident immediately, no matter how slight, to the nearest duly authorized police; and if requested to do so, to return to the scene of the accident and remain there until the police arrive to investigate.

    b. A driver involved in an accident which results in the bodily injury or death of any person or damage to the property of any one person in excess of one hundred dollars ($100.00) must submit a report of such accident to the Colorado Motor Vehicle Division within ten days on a special Safety Responsibility accident report form.

    c. Report ALL incidents involving personal injury or damage which leaves the vehicle immobile to OUTWARD BOUND logistic manager immediately after notifying local authorities and securing required emergency service.

    d. A written report is to be submitted within 24 hours using the vehicle incident report form provided to each vehicle and logistic handbook.

13. The logistic coordinator will see to it that vehicles are properly serviced and in safe operating condition.

14. Vehicle safety check before you roll:

    a. Gas, oil, battery, radiator, brakes, headlights, tail lights, tires, trailer hitch, trailer lights, safety chain, load.

    b. Emergency equipment - jack, lag wrench, spare tire, tool kit, flares, reflectors, first aid kit, fire extinguisher, extra supplies.

15. Load truck and trailer properly, tie down load securely. Balance the load, especially on the trailer tongue.

16. Make sure proper documents are in the rig.

VEHICLE INCIDENT REPORT

Do not admit liability or state responsibility for the incident to outside people.

Colorado law requires that you report any accident no matter how slight, to the nearest police station. All accidents involving injury or damage in excess of $100 must be filed with the Colorado Motor Vehicle Division within 10 days on a special Safety Responsibility accident form.

All accidents involving injury and/or damage leaving the vehicle immobile will be reported to COBS immediately after notifying the local police and necessary emergency services. A written report will be submitted within 24 hours. Phone COBS: (303) 825-0890 and as noted on trip equipment slip.

DESCRIPTION OF ACCIDENT OR LOSS (Use Reverse, if Necessary)	CAT. #

VEH. NO.	YEAR	MAKE	MODEL	VIN (Vehicle Identification No.)	PLATE NO.	OTHER INSURANCE ☐YES ☐NO

NAME OF OWNER ( ) SAME AS POLICYHOLDER	ADDRESS ( ) SAME AS POLICYHOLDER	PHONE

NAME OF DRIVER ( ) SAME AS OWNER	AGE	ADDRESS ( ) SAME AS OWNER	PHONE

RELATION TO INSURED (Employee, Family, etc.)	PURPOSE OF USE	USED WITH PERMISSION ☐YES ☐NO

DESCRIBE DAMAGE	REPAIR ESTIMATE $	WHERE CAN CAR BE SEEN?	WHEN?

OWNER	ADDRESS	PHONE

OTHER DRIVER ( ) SAME AS OWNER	ADDRESS	PHONE

DESCRIBE PROPERTY (If Auto: Make, Year, Plate No.)	OTHER CAR OR PROPERTY INSURED ☐YES ☐NO	COMPANY OR AGENCY NAME & POLICY NO.

DESCRIBE DAMAGE	REPAIR ESTIMATE $	WHERE CAN CAR BE SEEN?

NAME	ADDRESS	PHONE	EXTENT OF INJURY	AGE	INS. VEH.	OTHER VEH.	PED.

Draw a picture of the accident on back side.

NAME	ADDRESS	PHONE				

REMARKS

DATE | REPORTED BY | REPORTED TO | SIGNATURE (PRODUCER, INSURED OR DRIVER)

ACORD 2 AGENCY COMPANY OPERATIONS RESEARCH AND DEVELOPMENT

Appendix h

Course Report Form

Colorado Outward Bound School
RIVER TRIP REPORT

The outline below indicates the data to be recorded for all river trips. It is the river specialists' responsibility to submit this information to the River Manager at the end of the trip. The original goes to Denver and a copy will be returned to the River Manager.

1. Trip dates and location
2. Name and type of client; number of participants
3. Objectives
4. Staff
5. Trip log (give a brief day-by-day account of the trip; indicate campsites, weather, any significant happenings)
6. Safety related incidents (indicate any illnesses, injuries, near misses, boats capsized, man overboard, etc. Attach accident report forms if appropriate.)
7. Comments on goal realization, problems encountered, etc.
8. River Manager's comments.

Appendix 1

River Mileages and Elevations

	Yampa River - Deer Lodge Park to confluence			46.5 miles
Elevation	5595	Deer Lodge Park Campsite & Boat Ramp	mile	46.5
		Andersen Hole Camp	"	41.5
		Corral Springs Draw & Rapid	"	38.5
	5550	Tee Pee Hole Camp & Rapid	"	36.5
		Little Joe Rapid	"	29
		Five Springs Draw & Rapid	"	26.5
		Big Joe Rapid & Starvation Valley	"	24
	5200	Harding Hole & Bull Canyon Camp	"	20
		Mather Hole Camp	"	17.5
		Mantle Ranch, Private	"	12
		Mantle's Cave	"	11
		Tiger Wall & Outlaw Park	"	9.8
	5100	Warm Spring Rapid	"	4
		Box Elder Camp	"	2
	5060	Echo Park	"	0

	Upper Green - Lodore Boat Ramp to Echo Park			18.5 miles
Elevation	5335	Lodore Ranger Station, Camp & Boat Ramp	mile	243.5
		Wade & Curtis Camp	"	241
		Winnie's Grotto and Rapid	"	240
		Upper Disaster Falls	"	237
	5200	Pot Creek Camp	"	235
		Harp Falls	"	234
		Triplet Falls & Camp	"	232.5
	5125	Hell's Half Mile Rapid	"	231.5
		Rippling Brook Camp	"	230.5
		Wild Mountain Camp	"	226
	5060	Echo Park	"	225

	Lower Green - Echo Park to Split Mountain Boat Ramp			25.5 miles
Elevation	5060	Echo Park	mile	225
		State Line Camp	"	220
	5000	Jones Hole Creek & Camp	"	218.5
		Greasy Pliers Rapid	"	216.5
	4950	The Cove Camp	"	214
		Ruple Ranch } 20' in 2 miles	"	213
	4930	Rainbow Park Boat Ramp	"	208

	Moonshine Rapid		mile	206
	SOB Rapid		"	205
	Schoolboy Rapid	150' in 7 miles	"	204.5
	Inglesby Rapid		"	201.5
Elevation 4780	Split Mountain Boat Ramp		"	199.05

Colorado River - Moab to Hite Marina — 211.5 miles

Elevation 3945	Moab		mile	64
3925	Potash Landing		"	47
↑	Lathrop Canyon	170 miles to Hite	"	23.5
	Sheep Bottom Camp		"	18
50 feet	The Loop		"	11 - 7
50 miles	The Slide		"	1.5
↓	The Confluence		"	0 or 216.5 to Lee's Ferry
3875	Spanish Bottom Camp		"	213
	Brown Betty Rapid & Camp		"	212
3840	Little Upset Rapid #4		"	211
3780	Mile Long Rapids #'s 13-18		"	205 - 204
3740	Island Rapid #20 Camp		"	203
	Big Drop Series - Calf Canyon, Satan's Seat, Satan's Gut, #'s 21-23		"	203 - 202
3700	Lake Powell maximum elevation		"	201.5
	Waterhole Canyon		"	198.5
	Clearwater Canyon		"	192
3700	Mille Crag Bend		"	177
	COBS Rappel site		"	175
3700	Hite Marina		"	168.5

SUGGESTED REFERENCE AND READING LIST
FOR
RIVER TRIP LEADERS AND PARTICIPANTS

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All of the books marked with an asterisk are available from Westwater Books: Box 365, Boulder City, Nevada 89005. Write to them for a complete listing and prices. They maintain the most complete stock of river-rafting publications.